The Builder.

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New Almshouses, Wood Green.....Mr. A. W. S. Cross, F.R.I.B.A., Architect.

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The Cathedral Builders in England.

"AN original and interesting book on a subject that might well seem hackneyed," will be the verdict of everyone who has carefully read through Mr. Prior's volume.* The title is reminiscent of a comparatively recent publication of a widely different aim and character, and if credible history is to be preferred to fiction, however ingenious and romantic, the superiority lies with Mr. Prior. In this connexion it is amusing to find Lord Macaulay pilloried on a new indictment. That vivid and irresponsible writer's Brobdingnagian inaccuracy has often been discovered by specialists in the spheres of political, legal, naval, or military history. Mr. Prior now brings into the light of artistic history an almost grotesque example of his careless omniscience. "I believe," said Lord Macaulay in a conversation reported by Mrs. Beecher Stowe, "that all the cathedrals of Europe came into existence nearly contemporaneously, and were built by travelling companies of masons under the direction of a systematic organisation." "This guild, if it existed," Mr. Prior very truly comments, "must also have had a supernatural power of hiding its tracks, for in all our accounts and records are no references which can be twisted into a consciousness of a Freemason guild. Instead of indicating a central body of masoncraft to which ecclesiastics applied for the building of their churches, they mention artisans coming haphazardly together, and their organisation for the special work, as at Canterbury; or in the case of continuous building in one of our large cathedrals, we have the establishment of a cathedral bureau — 'opus,' or 'opera,' as it was called—such as at York, which has indeed practically continued to our own day."

With regard to another and more modern "discovery" of the "secrets" of mediæval building, Mr. Prior displays the same lucid sanity of mind. He entirely refuses to be carried away by the specious theory of "optical refinements," so confidently asserted by Professor Goodyear and his school of architectural microscopists. On this head he observes :—

> "The irregularities and shapely contours of the mediæval fabric have been lately carefully measured and gauged by level and plumb-line, and the discovery published as that of the recondite principles of design which underlie the architectural beauty of the Middle Ages. In my opinion such a discovery is valueless. I have never found any system of æsthetic creation in the proportions of mediæval building beyond the simplest promptings of the square and the compass. The curvings of wall and the irregular spacings of supports can be seen to be one of two things, either the immediate habit of craftemanship or the result of expediency—both varied by the difficulty of building piecemeal and to suit existing buildings, difficulties that were the constant necessities of church-work in the Middle Ages."

To come now to the actual structure of the book. It is laid out on strictly successive chronological lines as to its main division into chapters, but within each of the fairly well-defined periods to which each chapter is devoted full attention is directed to emphasising the important part played by local schools or trades in bringing about diversities of style contemporaneous as to their date. Mr. Prior has made this subject of the local varieties of style distinguishable in English mediæval art, and the causes which have produced them, particularly his own, and readers of the present work have presented to them in a compact form a generalisation of the widespread and painstaking researches more fully detailed in the author's "History of Gothic Art in England." The multiplicity of his architectural "periods" —seven between the Conquest and the Reformation alone—will surprise, and perhaps at first confuse, readers accustomed to the simplicity of the Rickman-Parker system of nomenclature; but the progress of research and the much more accurate historical information available at the present day have really shown that an adherence to the too broadly simple classification of those worthy pioneers may be historically inaccurate and misleading to modern students. Mr. Prior very rightly shows as strongly as possible the enormous mistake of treating the XIVth century as a homogeneous architectural period. In reality no greater and more catastrophic break in the continuity and resemblance of artistic work is known to history than that occasioned by the Black Death in 1349-50; and it is impossible to label the period

* "The Cathedral Builders in England." By Edward S. Prior. Portfolio Artistic Monographs Series. London: Seeley & Co., Great Russell-street; New York: E. P. Dutton & Co. 1905.

under the easily comprehensive term "XIVth century style."

On the social causes which brought about different manners of building much very valuable information may here be found, and the author's conclusions, which show both acute critical insight and trained intelligence in the handling of records, may generally be accepted as quite sound. While agreeing however, with Mr. Prior as to the necessity of strongly marking the totally distinct character of the art of—speaking in round numbers—the second half of the XIIIth century and the first half of the XIVth (it is in treating all the work of these two periods as being of one and the same style that Rickman's threefold classification is so especially contrary to facts), we venture to say that we do not think he has made quite clear his reasons for limiting the duration of his period called "The Summit of Gothic Art"—naturally the most important and fascinating of all the different epochs—to the dates (of course approximately) 1250-1290. The former date is certainly as convenient and significantly chosen as could be desired, but does the date of 1290—about the middle of the reign of Edward I.—as nearly define the change from what Mr. Prior so appropriately labels the *regal* style of the later half of the XIIIth century to the aristocratic or *chivalric* style of the earlier half of the XIVth century as would the year of the death of that great sovereign (1307), or, to keep to round numbers, the date 1310? In their general mental attitude, and therefore in the sentiment and expression of their arts, the people of mediæval England appear at any given time to show a common character, a special impress, in the formation of which the individuality of the reigning monarch had a very considerable share. Seldom was this more strikingly evident than during the reign of Edward I. That king unquestionably set the tone of strenuous work and unswerving, perhaps pedantic, legal strictness to the whole nation, all of which may be seen reflected in contemporary art. But his influence did not greatly wane, nor (as we read them) did the fashions of building greatly alter, so long before his death as 1290. Neither the Eleanor crosses and tomb, nor Bishop de Luda's chapel in Ely-place, show any marked difference in style from the work done just before; while, on the other hand, they differ entirely, throughout their whole conception, from anything carried out in the time of Edward II. or Edward III. There was certainly never one "Edwardian" style common to the reigns of the first three Edwards—Mr. Prior himself would never agree with that—but it seems almost treason to the memory of the great Edward I. and of his bishops, great statesmen and great lawyers like their chief, to throw back the advent of the decadence and the almost *rococo* luxuriance of the "Flowing" style into the days when they were still in full vigour. If confined to the period 1310-1350 (Sharpe made the division *circa* 1315, which accords very well both with dated buildings and with time for the spread of new habits of life after the austere ways of the first Edward had fallen out of fashion), nothing could better describe the spirit of the builders of the age than Mr. Prior's "[they] seem to me to present themselves in the guise of splendid revellers making a day of carnival for which all the hard facts of life are put away out of sight. It is all brilliance and merriment in their luxurious spendthrift art, bred of the joy and pride of a class of nobles." One cannot help noting the striking parallel presented here with what took place in France four centuries later. "In their architecture," he continues, "the monk's enthusiasm, the bishop's piety, the king's artistic fashion are gone out of date: all have yielded to the rule of chivalry, which in one aristocratic equality makes pageant for king, noble, and ecclesiastic. As they appeared at the tourney, or in the chase, or in the glory of the battle array, so as one social class they entered the lists in the pride of their sumptuous building." A true and graphic account is this, only weakened by the too sweeping commencement:—"The XIVth-century architects seem to me, etc." Nobody knows better than Mr. Prior that his description really applies to a well-defined period of barely forty years, and it is simply because his opening phrase may be misunderstood that we have dwelt so long on it.

One more quotation must be allowed us in order to give an adequate idea of the scope and quality of the book. On a subject very little thought about, felt, or understood by nine persons out of every ten who take an interest in architecture, that of the colour of buildings. Mr. Prior makes some most pertinent remarks:—

> "The sense of a living colour must be added to that of living form. Though the original painting of our cathedrals has perished from their walls or is left to us as the merest patches, and faded into dinginess—yet, wherever we find a piece that is real, what a life of colour does it give! It is this realisation of colour by the mediæval workman which, in the eye of the artist, raises him on a plane to which no modern architect reaches. . . . Sometimes, indeed, the old painted glass remains as a sample of the brilliance, and we may catch in the hollow of a moulding or the recess of a roof-timber the suggestion of what an art of colour meant. Here and there by chance preservation a chapel or a tomb gives us the ancient treatment, but usually there are now only the crude grounding paints, which were brought into harmony by glazings and diapers."

This is a point especially worthy of attention, for these incomplete rudiments of the original scheme (to quote Mr. Prior further) "have deceived us, and indeed modern decorators, under the theory of revival, have seized on such under tints and sought to restore the ancient painting of buildings by their use. But the crude and unpleasant effects of this revival painting were not those of the original effect. . . . Nothing of crudity found place in the colour schemes of the Middle Ages—for have we not their illuminated manuscripts in evidence?"

True to his principle of the inalienable association of brilliant colour with mediæval architecture, Mr. Prior has adorned his book with four examples of XIVth and XVth century illuminator's work. These plates are copied in colours and gold with a tender accuracy which puts them on an altogether different plane from the raw and blatant "reproductions" which have passed current as true representations of mediæval painting until the last few years, and they should enable anyone to realise in a considerable degree the original aspect of our Gothic structures. The other illustrations, which are numerous, are selected on grounds at once interesting and characteristic of the author's attitude. He says in his introduction that "the majority of our mediæval buildings can no longer be regarded with enthusiasm, and it would be absurd to illustrate them as specimens. The genuine works that remain can scarcely be photographed without the inclusion of some piece of neo-Gothic church-furnishing. In fact the painter never dreams nowadays of turning to restored churches for his selections and impressions, whereas a hundred years ago it was different." Accordingly we are presented with facsimiles of drawings and water-colour sketches of cathedrals by "old masters" from Hollar down to Garland, Cotman, and Mackenzie, not omitting Turner's magnificent "Salisbury Cathedral from the Cloisters," nor specimens of the work of Constable and De Wint. The *format* and printing of the book are satisfactory, and we have noticed only two printer's errors: on p. 97, in "as at church, Hampshire," "Christchurch" is evidently intended, and on p. 99, where "this XVth and XVIth century work has claims against the dismissal, etc.," is printed, the context seems to require "XVIth and XVIIth century." It only remains to be added that the book is provided with some useful chronological tables and a sufficient index.

SOME MORE ABOUT CROOKED BUILDINGS.

PROFESSOR GOODYEAR appears to be sending round among the architectural profession an elaborate pamphlet as a counterblast to our leading article of September 23, in the course of which he implies that our opinion on the subject is not worth consideration. In that case, it seems strange that he should have gone to so much trouble and expense in publishing a reply to it. We have no intention of entering into anything like a controversy on the subject, but we do not think this kind of document should be allowed to be sent round without a word or two from us in regard to its misrepresentations. The very first sentence conveys a completely wrong impression—that we declined to publish the first instalment of Professor Goodyear's reply to us in the course of his lectures at Edinburgh. A short report of the lecture was sent to us by the hon. secretary of the Edinburgh Association, but there was nothing about it to intimate that it was in any special sense a reply to us, and we declined to find space for it because we did not attach any value to Professor Goodyear's theories, and therefore did not think it necessary to occupy our space in reporting his lecture. As to the present "Reply," Professor Goodyear's method seems to be to ignore our actual argument and to find fault with us for not having said something else which had no bearing on it. As an example: Professor Goodyear asserts that the plan of the front wall of St. Mark's has a curve inward of

10 in., and that this is an intentional refinement. We reproduced his plan in order to show that the plan of St. Mark's is most carelessly set out, with hardly a right angle or two parallel walls; and we said that it was preposterous to suppose that people who set out the whole building in so careless a manner should suddenly have been seized with a passion for minute refinements in setting out one wall; not to speak of the fact that to set it out hollow was, in respect of architectural effect, exactly the wrong thing to do. To this Professor Goodyear replies that it is not his plan, but Signor Saccardo's, and that he said so. What has that to do with our argument? He also asserts that we misrepresented him as attaching any intention to the irregularities of the ground plan. We did nothing of the kind. We said—

"No one who looks at that plan can pretend, we think, to discern any guiding motive for the irregularity of the direction of the walls; nor, as far as we understand him, does Mr. Goodyear venture on any such suggestion in regard to it."

Our sole point was that as all the plan was carelessly set out, it was to be presumed that the curve (if it is a curve) in the front wall was carelessness also. The sentence about "the vagaries in plan which are included . . . as having some architectural intention" had no reference to the St. Mark's plan, as any one who read the article might have seen; it referred to the various irregular and oblique-lined plans which are included in the illustrated catalogue, we presume because they are supposed to illustrate his theories, or else why are they there?*

We fear we must deprive Professor Goodyear of his jubilation over another little point, viz.: that he had called a certain diagram "Asymmetric scheme in arcades," while we called it "A Symmetric scheme." We wrote "A-Symmetric" with a hyphen, which we consider a better orthography; either by accident, or because the printer's reader misunderstood it, the hyphen was dropped out, and the mistake escaped the editor's notice till too late. In any case the sentence was merely a quotation of the title of the diagram, and there being a clerical error in it had nothing to do with the argument. We went on to say—

"It is not a scheme at all, there is no rule or purpose in it; if the spacing was wider in the middle and narrower at the ends or the reverse, there would be something in it; but the differences are quite irregular, and without any system at all, and we are convinced that they are simply carelessness, or a conviction that it was not worth while to divide them equally."

Now, in our opinion, Professor Goodyear must have known, or ought to have seen, that that mistake was a misprint of some kind; it was impossible that he could really have supposed that the editor of this journal did not know the meaning of "asymmetric"; and to quote it in that way as a separate sentence, without the context, seems to us a piece of adroit misrepresentation.

In reference to this point, of irregular spacing, Professor Goodyear seems to think we are crushed by the fact that Penrose found irregular spacings in the Parthenon, and irregular widths of abacus, and believed that they were intentional. Professor Goodyear does not seem quite to understand that we do not take opinions ready-made from other people, however illustrious. We accept Penrose's evidence absolutely for facts, but we do not therefore accept his reasoning: we do our own reasoning. We consider that Penrose was mistaken in his view, and we have always thought so. Penrose noted that the abaci of the north flank of the Parthenon "are of various sizes and decrease from east to west, but not according to any fixed law"; we find that we had underlined the latter words in pencil in our copy, many years ago. The principle is very simple. When you find variations in line or size made on a consistent system and which lead to a consistent result, it is reasonable to suppose that they were intentional. When they show no consistent system and lead to no consistent result, it is unreasonable to think so. That is the whole thing in a nutshell.

In regard to the west front of Peterborough, we question very much the suggestion, quoted by Professor Goodyear, that the front had gone over before the vault was put in. It is possible (if we may dare to make the suggestion!) that we know more about Peterborough than he does. A good many years ago, before the scare about the dangerous state of the front arose, we remember Mr. Irvine, the well-known clerk of works, who knew every stone of the building, taking us up on to the nave roof to see how the mass of the west front had separated bodily from the masonry behind it. Now, if that had happened when the front had just been finished, the mediæval builders would have made it good. As that was not the case, it is obvious that a great portion at least of the settlement must have taken place at a later time; so that we do not think there is very much in the assumption that the front had gone over from the first, at all events not to anything like its present condition.

Professor Goodyear recites in his pamphlet some of the complimentary honours which have been conferred upon him, we suppose as an indication that we ought to treat his views with more respect. We also used to regard Professor Goodyear as a very clever man; we remember some investigations of his on the origin and history of the Ionic volute which struck us as most interesting and valuable. Our complaint is that he has become too clever. He has apparently been carried away with the idea that he has caught sight of a kind of new Promised Land in architectural investigation, and has become *tête montée* on the subject. Everything seems to show itself to him in the light of an architectural refinement, and in this faith he has made a collection of examples, which he calls "architectural refinements," of which we believe the majority arose from accidental causes or from dilapidations, and of which, if they did not so arise—if it could be proved beyond doubt that they were intentional—ought rather to be called "architectural blunders." We are told, for instance, that the lower story of Notre Dame leans outward 11 inches, the second story 4 inches, while the remainder is vertical; and we are asked to believe that this has been done deliberately. Will Mr. Goodyear, or will any one, tell us what possible advantage of architectural effect was to be served by such a lunatic method of building? And is not the probability merely that they found out that they had been careless in plumbing in the lower part, and were more careful afterwards? And on the evidence of Mr. Prior, whose work is reviewed in the previous article, and who understands the spirit of mediæval architecture better than most men, the idea of there being a constant search after "refinements" of this kind is quite contrary to the whole spirit and system of mediæval building.* As to Professor Goodyear's rather sneering remark that the *Builder* is the only paper which has been entirely opposed to his views, we regard it as one of the best compliments that could have been paid us; and Mr. Goodyear will perhaps be surprised (even shocked) to learn that the week our article was printed we received two communications from architects both of whom are specially learned—one of them distinguished—in archæological studies, expressing their great satisfaction at our having taken such a decided stand against these absurdities. And as to our title, "The Glamour of Crooked Building," which has given Professor Goodyear such offence, we think it exactly expresses the situation. He has been carried away by a vision of architectural refinements pervading every twist and distortion in ancient buildings: he has spent in the measurement of them an unremitting diligence, and in their attempted interpretation an almost pathetic ingenuity; but he has forgotten to take with him one sober companion whom neither architect nor architectural critic can afford to dispense with, viz.: Common Sense.

* In regard to St. Mark's, it seems we are to believe that the bad nature of the ground, shown by the irregularity of the floor, only exists under the floor, where there is no weight on it; that where the walls rest it is an excellent foundation, and St. Mark's is in a perfectly sound condition! Yet we read not many weeks back in the *Times* that St. Mark's was structurally in so precarious a condition that the gravest anxiety was felt about it.

* We may remark that the concurrence of that testimony with the present article in this issue is entirely fortuitous. The review of Mr. Prior's book was written three or four weeks ago by an independent contributor, and should have appeared last week, but was held over for want of space.

NOTES.

The Catastrophe at Charing Cross Station.

So GREAT is the confidence placed in the strength and durability of iron structures that the partial collapse of Charing Cross station roof comes literally as a thunderclap. The disaster is sufficiently serious to render unnecessary the sensational headlines such as "Collapse of the Station Roof," which even the most respectable of daily papers have printed. In point of fact less than one-tenth of the roof has fallen; the remainder stands firm, and probably is quite safe. Consequential damage has been done to part of the western wall of the station, and by fragments falling from that structure to the Avenue Theatre on the level below. Briefly, that is the extent of the failure and of its results from the structural standpoint. There has been also damage inside the station, and unhappily several lives have been sacrificed and nearly forty persons more or less seriously injured. Until careful investigation has been made it would be impossible to

form a decided opinion as to the originating cause of the accident. But having regard to the design of the roof trusses, and the secondary results of the first failure, it is practically certain that one of the tie-rods suddenly gave way, owing either to the growth of some hidden defect that had been developing during the past, or to a settlement causing undue strain to come upon a tie-rod, itself in perfect condition. Assuming the fracture of so important a member, from any cause, the bay or bays affected would naturally settle at the centre, thrust out the weaker of the two side walls at the line of support, and fall to the ground. This disaster is not a case of bad design, for the roof has stood for nearly half a century. Of course searching inquiry will be made into the cause not only by the coroner, but also by the engineers of the South-Eastern and Chatham Railway, who have already secured the co-operation of Sir Benjamin Baker. We do not wish to say one word that might add to any feeling of uneasiness with regard to the safety of similar roofs, new or old. Still, it is a point for serious consideration whether the safety of a great structure should be allowed to hang absolutely upon a single tie-rod, however strong it be or perfect it may appear to be. That was almost certainly the case at Charing Cross, and is the case elsewhere. Duplicate tension bars would not cost much, and if they were adopted one might break without any harm being done. A new tie-rod is far less expensive than a new roof.

Lodging-Houses and Fire Escapes.

IT is satisfactory to find from the Report of the Public Health Committee of the London County Council that it has for some time past been examining common lodging-houses in London with a view to prevent danger from fire, and that it has obliged reasonable steps to be taken to minimise this danger. "Our general practice," says the Report, "is to insist upon all alternative means of escape being provided, and this has necessitated the construction of new staircases in a number of the larger houses, and of external balconies and step-ladders in others." There are now in London 251 common lodging-houses, and these are now, it would seem, reasonably safe in case of fire. It would be by no means undesirable if the London County Council were to inspect ordinary lodging-houses, or at any rate inspect such as the proprietors were willing should be inspected, and give certificates of safety where possible. There are a considerable number of lodging-houses in London in which there is no means of escape in case of fire.

Lessees of Mortgaged Property.

AN entirely new point has been settled in the case of Robbins *v.* Whyte, and one of importance to lessees of mortgaged property (and very commonly the smaller class of house property is mortgaged). Shorn of all legal technicalities, the decision amounts to this—that, although the mortgagor, whilst he remains in possession of the property, has power by virtue of the Conveyancing Act, 1881, to grant certain leases, he has no power to accept a surrender of the lease without the concurrence of the mortgagee. In the above case, after a due surrender of the lease to the mortgagor, the lessees were held still liable to pay the rent to the mortgagee; and therefore it appears that the lessee in his own interest should see that the surrender of his lease is accepted by the mortgagee.

The Belfast City Tramways.

THE official opening of the extensive tramway system in Belfast took place last week. The work in connexion with the permanent way was only begun last February, so that apparently only about nine months were required to complete the work, although extensive alterations had to be made to sewers, gas and water mains, etc. There is nothing very novel either about the track or the plant, but this is probably due to the fact that traction engineers have to work within the narrow limits of the Board of Trade Rules, and manufacturers have found it to their advantage to standardise machinery and accessories. The greater part of the overhead equipment is supported by span wires, only four or five miles of side bracket and centre pole construction being used. We were never very favourably impressed by the specification of the British Standards Committee for lap-welded mild-steel poles. We think that a little more latitude should be allowed in the design of overhead systems. Granting their necessity, surely in an important town a more serious attempt might have been made to harmonise the poles, etc., with the surroundings. The centre poles are lighted by means of two glow lamps each fixed at a height of about 12 ft. from the ground. We are informed that these lamps are not intended for lighting the streets, but are merely—like the red lamps of the street-menders—for indicating the position of an obstruction in the thoroughfare. Provision, however, has been made for erecting arc lamps on the centre poles in case the authorities should change their minds. We are glad to notice that the sub-station is connected with the generating station by means of a three-core high tension underground main. As the pressure of transmission is 6,000 volts we expect that many electricians would have preferred to connect the stations with overhead wires in order to effect a somewhat microscopic saving in the total capital cost.

The Witham Railway Accident.

AFTER full consideration of the evidence, Colonel von Donop is not able to assign the precise cause of the disastrous mishap which took place in September near Witham station. He finds no ground for attributing the accident to defective rolling-stock, and although the permanent way construction is admittedly not of the highest standard, he considers there were no points of inherent weakness sufficient to cause the accident. It is said in the Board of Trade report that the platelayers who were working at the crossing close to the station may have removed some fastenings, which they were not able to replace before the train arrived. Of course, it is possible that the mishap was due to some ill-judged action of the kind, and the recommendation that greater supervision should be exercised over the work of platelayers is one that should not be neglected. We particularly call attention to the conclusion of the inspector that the speed of the wrecked train between Blunts Hall signal-box and Witham station "was well over 65 miles an hour, and probably amounted to 70 miles an hour." In view of this speed, and statements by passengers that severe jerks and bumps had previously been felt at Witham and elsewhere, we cannot help repeating the doubt whether the permanent way of the Great Eastern Railway is up to the standard desirable for modern high-speed passenger traffic.

The Ramsgate Tramway Accident.

NOTHING of a particularly satisfying nature is contained in the report by Colonel von Donop to the Board of Trade relative to the tramway accident at Ramsgate in August last. We certainly agree with the inspector in blaming the tramway company for entrusting the conduct of cars up and down Madeira-hill to a driver having only nine days' experience, but cannot endorse the opinion that the gradients of this dangerous road are not excessive, although the risk of mishaps may not be very great if the brakes of a car are in perfect order, if the driver is thoroughly experienced, and if he takes care to reduce speed before commencing the descent and to keep the car well in hand. There are already altogether too many "ifs" as factors in this particular problem, and two more are suggested by the Board of Trade inspector, namely:—That if a car does get out of hand a derailment will probably result and possibly lead to further disaster. No doubt the Ramsgate Corporation would be pleased if Colonel von Donop had condemned the Madeira-hill route as dangerous. This could scarcely be expected, however undesirable that steep and curving road may be for tramway purposes. The inhabitants of the town will have to be satisfied with the execution of some minor improvements of the track suggested in the report, and which we understand will be carried out by the tramway company.

The Orientation of Buildings and Streets.

SOME very suggestive material for the consideration of architects is provided in the admirable paper read by Mr. William Atkinson before the Society of Arts (Boston, U.S.A.). The author was led to investigate the subject in connexion with hospital design, but the results are equally applicable to all buildings and groups of buildings. The diagrams are most interesting. One of them, representing the shadows cast by two cubes in different positions, shows that a square building placed with one angle towards the meridian shades the surrounding area very much less than a similar building with one side of the square facing in the same direction. By joining the intersections of the hourly shadow lines, curves are obtained indicating the number of hours during which each area is in shadow daily, and making possible the calculation of sunlight received per square foot per hour by any portion of the exposed surface. Another diagram, representing the shadows corresponding with five different positions of a U-shaped court, presents

some striking contrasts of eye-opening character. Other diagrams showing the floor area of rooms illumined by one window facing different points of the compass enables the architect, by superposition of the areas, to obtain the floor illumination for a room of any shape and with windows variously situated. In many cases the positions of buildings and windows are governed by the orientation of streets and roads, which in most American cities has not been considered in connexion with the question of light, and in Europe is generally left to chance, even when the surveyor has any choice in the matter. It may not always be possible to follow the rational methods of laying out streets advocated by Mr. Atkinson, but much benefit would be secured by adopting a regulation, similar to that in the proposed building law of Massachusetts, that no portions of a building, except chimneys and kindred constructions, shall project beyond either of two sloping lines drawn from each side of the street and forming an angle of 52° with the horizontal.

The Electric Strength of Air.

Mr. Alexander Russell read an interesting paper to the Physical Society last week on the electric strength of air. He proved that the electric pressure required to produce a spark between metal balls or wires could be calculated with certainty by means of the old-fashioned theories of Cavendish and Coulomb without having recourse to the modern theory of "ions" which asserts that the air has no definite electric strength at all. The author analysed the results of the more important experiments made during the last fifty years and showed that all the results could have been predicted—in some cases with a maximum inaccuracy of less than 1 per cent.—from the results given in Lord Kelvin's Royal Society paper in 1860. The results of the very elaborate and expensive tests carried out by Professor Steinmetz in America in 1897 for the General Electric Company and by M. Thury at Geneva in 1903 for the Compagnie de l'Industrie Électrique are in exact accordance with theory. It is interesting to notice that in proving his results Mr. Russell uses Lord Kelvin's method of electric images. It seems to us that many important practical consequences follow from the determination of this physical constant. It is well known to those electricians who have to design overhead systems for the transmission of electric power at high pressures over considerable distances, that at night time the overhead wires are seen surrounded with a luminous glow, or "corona" as Mr. Russell calls it, which is brighter the higher the pressure. It is also known that when this glow makes its appearance the electric power lost in heating the air becomes appreciable, and that this fixes a definite economic limit to the pressure that can be used to transmit power. For instance, there is a sharp controversy at present being carried on in the technical press as to whether it is possible to utilise the power of the Victoria Falls at the mines on the Rand, a distance of at least 550 miles. A pressure of 140 kilovolts is proposed. We have made some rough calculations, using the constant Mr. Russell has found—38 kilovolts per centimetre—and find that unless aluminium wires of what is apparently a prohibitive diameter are used the loss in heating the air would be enormous.

Future Cottage Exhibitions.

It has been decided by the National Housing Reform Council to hold in 1907 four exhibitions of cottages to be built for 200*l.*, not including cost of land, and under urban by-laws. The reason for having four exhibitions is to give the opportunity of experimenting in differing methods of building suitable to the conditions and materials of different localities. Thus it is proposed that one exhibition should be held on the north-east coast; one in South Yorkshire; one in South Wales; and one in the London District. This is a good idea, and an exhibition of cottages for 200*l.* will be more satisfactory than one for 150*l.*, since we know that the former can be done, whereas the latter is doubtful except under specially advantageous circumstances.

The late Mr. Armstead.

By the death of Mr. H. H. Armstead we lose a sculptor who, though his work hardly rose to the highest ideal possibilities of the art, was a thoroughly trained and capable artist, and produced a great many works which were eminently successful both in conception and execution. We have always very much admired his series of figures of poets, musicians, and painters forming the reliefs on the south and east sides of the podium of the Albert Memorial, more especially the group of the French artists of the middle of the last century—Decamps, Vernet, Ingres, and others—on the north-east angle of the podium. It is only necessary to compare these two sides of the podium with the sculptures on the west and north sides, by another hand, to recognise how superior was his art to the mere commonplaces of architectural sculpture. Some information as to his work and career will be found under the head of "Obituary" on another page.

Messrs. Dickinson's Gallery.

At Messrs. Dickinson's Gallery in Bond-street is a miscellaneous collection including some interesting decorative work. Mrs. Roscoe Mullins exhibits a case of "Old Jewellery Re-made," in which various bits of ancient silver or other work are made up as portions of necklaces and other ornaments, with the addition of chains and other decorative details. It is rather a new idea, and some effective work is the result. Other cases contain modern jewellery work by Mr. and Mrs. Hadaway, enamels by Mrs. Engelbach, which are very good; silver work by Miss Wadsworth and Miss Remington, and embroidery by Mrs. Walter Crane. The exhibition of "Tinsel Pictures" by Miss Birkenruth is a form of art which does not interest us much. "Tinsel pictures" appear to mean figures (portraits mostly) with the faces painted in watercolour and the costumes made up out of real stuffs planted on. It is not a form of art worth encouraging.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The third general meeting (business and ordinary) of the session of this Institute was held on Monday, the 4th inst., at No. 9, Conduit-street, Mr. H. T. Hare, Vice-president, presiding.

Examination Results.

The minutes of the last ordinary meeting were taken as read, and the following results of the November Examinations (Preliminary, Intermediate, Final, and Special) and the names of successful candidates were read:—

Preliminary.—The Preliminary Examination, qualifying for registration as probationer R.I.B.A., was held in London and the undermentioned provincial centres on November 7 and 8. Of the 210 candidates admitted, claims for exemption from sitting for the examination were allowed to the number of forty-six. The remaining 164 candidates were examined, with the following results:—

District.	Number Examined.	Passed.	Relegated.
London	82	67	15
Birmingham	5	2	3
Bristol	8	6	2
Cardiff	14	12	2
Leeds	17	12	5
Manchester	24	18	6
Newcastle	14	11	3
	164	128	36

The following passed candidates, with those exempted—numbering altogether 174—have been registered as probationers:—

A. Adam, Paisley, N.B.
C. A. Aish, Kingston-on-Thames.
E. M. Armstrong, Pretoria, S.A.
C. F. Bailey, Walsall.
A. L. Ball, Birmingham.
B. V. Bartholomew, Walthamstow.
F. C. Barrett, North Finchley, N.
F. R. Barry, Richmond.
A. Berrington, Birkenhead.
H. C. Berry, London.
J. A. Bessant, London.
W. S. Betts, Clapham.
E. D. Blacker, Clifton.
H. Blenkinsopp, Sheffield.
H. Boddington, Wilmslow.
G. Bosher, Merthyr Tydfil.
C. W. Box, Benfleet.
D. W. Boyd, Belfast.
A. G. Brace, Knowle, Warwickshire.
J. S. Bray, Exeter.
W. J. Burton, New Cross, S.E.
C. F. Butt, London.
R. W. Cable, Brixton.
C. S. Cameron, Aberdare.
F. E. Cannon, Lincoln.
G. R. Carter, Leicester.
W. Carter, Sunderland.
H. F. Castle, London.
E. S. Chivers, Ampthill.
R. Church, Glasgow, W.
A. N. Clark, Southsea.
W. L. Clark, Petersfield.
W. E. Clarke, Ewell.
G. F. Clarkson, Kensington, W.
W. H. Clough, Gateshead-on-Tyne.
A. J. C Cooper, Henfield.
L. L. Corkhill, Ramsey.
F. L. Crampton, Newark.
H. A. Crooke, Acton.
L. A. Culliford, Ealing.
K. Dalgliesh, London.
C. T. Davidson, Harton, South Shields.
G. S. Davies, Swansea.
V. R. Davis, Aberdare.
D. J. S. Dawson, Barking.
W. Dean, Lewisham.
F. Dowdeswell, Palmer's Green, N.
G. S. Dransfield, Barnsley.
H. Dye, Portsmouth.
D. N. Dyke, London.
E. H. M. Ebbs, Harlesden, N.W.
W. F. Edge, Edgbaston.
J. A. Emes, Balham Hill, S.W.
A. E. Evans, Ferndale, South Wales.
W. H Fielding, Cardiff.
E. Fillingham, Bradford.
G. W. Filliter, B.A. Oxon, Higher Broughton.
N. Fisher, Leeds.
A. Forbes, Reading.
G. S. Ford, Nottingham.
G. Forsyth, B.A. Cantab., London.
W. S. Foster, Hull.
W. T. Garbutt, Bradford.
R. R. Gaskell, Hull.
W. W. Gibbings, Reading.
A. Gibbs, Moseley, Birmingham.
S. Grabham, Sunderland.
M. A. Hall, Newport, Lincoln.
F. M. Hammond, Bradford.
H. Harper, Handsworth, Birmingham.
J. S. Harrison, Bolton.
J. C. Harvey, Northampton.
W. H. Hattersley, Cambridge.
G. V. Hawker, Bournemouth.
J. Hayhurst, Blackburn.
G. E. Hedley, South Shields.
G. M. Hedley, Cullercoats.
J. Hill, Heaton, Newcastle-on-Tyne.
G. W. Home, London.
H. R. Hooper, Ipswich.
J. H. Horniman, St. Leonards-on-Sea.
L. W. Ingham, Leicester.
E. R. Jarrett, London.
B. Johnston, Mutley, Plymouth.
J. J. Johnston, Longtown, Cumberland.
F. S. G. Judd, Windsor.
C. S. Kimpton, Wandsworth, S.W.
A. Lakeman, London.
G. Law, Ware.
G. H. Ledger, Epsom.
A. J. Lee, London.
W. L. B. Leech, Ipswich.
S. T. Leete, Weston-super-Mare.
G. E. G. Leith, London.
W. J. Lewis, Ferndale.
L. S. Littlejohn, Eccles.
B. H. Lodge, Putney.
P. N. Logan, Bristol.
W. H. Louw, London.
C. E. Lovick, Crowthorne.
A. M. Lusby, Fareham.
D. R. Lyne, Cheltenham.
D. McLean, B.A., Cantab, Corbridge-on-Tyne.
L. D. Maddox, Llanishen, Cardiff.
B. F. Matthews, London.
R. H. Mattocks, Windermere.
J. W. Mawson, Windermere.
H. G. McCoy, High Wycombe.

D. L. Meckleham, Hampstead, N.W.
S. Mercer, Blackburn.
H. J. Midson, Crouch End, N.
S. E. Minns, Hull.
H. E. Moore, Ealing.
F. W. Moore, Keighley.
C. J. Moorehead, Manchester.
E. E. Morgan, Crouch End, N.
H. J. Murphy, Cork.
A. E. Newbound, Newark.
W. W. Nimmo, Gosforth, Newcastle-on-Tyne.
A. T. Nicholson, Bolton.
W. H. Ogden, Wakefield.
G. Parkinson, Burnley
T. L. Pearce, London.
A. N. Peckham, Westminster.
R. M. Pigott, Wandsworth Common, S.W.
F. C. Plummer, Liverpool.
P. W. Pocock, Egham.
J. J. Price, Clifford, Herefordshire.
I. M. Pritchard, Beaumaris.
W. S. Putwain, East Dulwich.
O. B. Raven, Gainsborough.
R. G. Rice, Derby.
H. E. Richards, Ilford.
V. Rienaecker, Kensington, W.
H. Roderick, Aberdare.
M. S. Rogers, Flint.
W. Royde, Porthill, Stoke-on-Trent.
G. H. Russell, Hitchin.
E. P. P. Samuels, Llanfairfechan.
E. Sanders, High Wycombe.
S. P. Schooling, Enfield.
E. W. B. Scott, Norwich.
B. W. H. Scott, Enfield.
C. J. G. Seddon, West Hampstead, N.W.
A. E. Shapley, Heaton, Newcastle.
R. H. Simmonds, Southampton.
T. A. Skinner, Bristol.
C. V. Smith, Tunbridge Wells.
S. Smith, West Hartlepool.
C. L. Souster, Gorleston.
F. D. Sowerby, London.
P. N. Stedham, Fareham.
F. H. Swindells, Hampstead, N.W.
M. J. Tapper, London.
A. P. Thomas, Bridgend.
E. J. Thomas, Maesycwmmer.
W. H. Thompson, Blackpool.
R. J. Thomson, Arbroath.
G. L. Thorne, Southampton.
A. Tinker, Pendleton.
A. T. Tippetts, S. Woodford, Essex.
A. E. V. Tutte, Portsmouth.
A. E. Vey, Chiswick, W.
D. H. Walker, Bridlington.
S. P. Walker, Newark.
A. Waller, Bradford.
F. G. Walmsley, Blackburn.
R. Williams, Menai Bridge.
G. S. Woodeson, Tilehurst.
F. Woodward, Hampstead, N.W.
E. W. Wray, Chelsea.
F. C. Wylde, Clapham.
O. Wyn, Port Dinorwic.
W. C. Young, Heaton Moor, Stockport.

Intermediate.—The Intermediate Examination, qualifying for registration as student R.I.B.A., was held in London and the undermentioned provincial centres on November 7, 8, 9, and 10. One hundred and thirty-one candidates were examined, with the following results :—

District.	Number Examined.	Passed.	Relegated.
London	82	37	45
Bristol	9	6	3
Leeds	19	8	11
Manchester	21	14	7
	131	65	66

The passed candidates, who have been registered as students, are as follow, the names being given in order of merit as placed by the Board of Examiners :—

J. R. Truelove, Sheffield.
R. I. Smith, Weston-super-Mare.
W. R. Dawson, Halifax.
W. T. Benslyn, Oldbury.
J. Woollatt, Wilford, near Nottingham.
C. V. Hodges, Leicester.
H. V. M. Emerson, Chiswick.
R. Evans, London.
E. Ainsworth, Blackburn.
C. B. Metcalfe, Bradford.
F. D. Thomson, Dundee.
C. G. Boutcher, London.
F. H. Bromhead, Harborne, Birmingham.
J. F. Schofield, London.
F. Wade, Frizinghall.
E. G. Allen, S. Woodford.
C. Bristow, West Norwood, S.E.
J. Allner, Manchester.
H. C. Anderson, Heywood, Lancs.
F. J. Osborne, Birmingham.
H. E. Dicks, Cheltenham.
S. W. Mobbs, Oulton, Lowestoft.
D. Whittaker, St. Helen's.
C. E. Curphey, Douglas.
E. J. Scaife, Bolton.
A. Bracewell, Keighley.
F. D. Ward, Hastings.
F. Finn, Canterbury.
J. H. Willman, Wellingborough.
J. Dovaston, Ealing, W.
C. E. Hanscomb, Ladywell, S.E.
P. C. Hoy, Manchester.
W. G. Shaw, Blackburn.
D. S. Gardner, Weston-super-Mare.
J. W. Hays, Wingate, Co. Durham.
G. A. S. Atack, Blackburn.
P. S. Brenton, Bath.
R. G. Burrow, Old Trafford, Manchester.
A. E. Catt, Kingston-on-Thames.
J. H. Chaundler, East Sheen Avenue, S.W.
R. R. Christien, Bolton.
F. J. Coghlan, Cheltenham.
R. L. Collingwood, Richmond, S.W.
R. A. Dixon, Birmingham.
R. K. Ellison, Huntingdon.
R. J. Goulston, Sydenham, S.E.
J. B. Healing, Hampstead, N.W.
H. W. Higson, Bolton.
G. H. Jones, Cardiff.
G. G. King, Belfast.
D. C. Leigh, Winsford.
T. C. Little, Carlisle.
W. P. Major, Bristol.
A. C. Meston, Chiswick.
C. Oldrey, Plumstead.
T. M. Richards, Barnes.
B. H. T. Rodd, Winton, Bournemouth.
J. W. Shaft, Petersfield.
H. N. Smith, Lewisham Hill, S.E.
G. Unsworth, Petersfield.
A. Wheatley, Barnsley.
H. J. Wilson, Peterborough.
J. D. Winder, Wandsworth Common, S.W.
E. M. Wood, Hipperholme, Halifax.
A. M. C. Young, London.

Exemption from the Intermediate Examination.—The following probationers, having attended the full course in architecture at University College, Liverpool, and having obtained a first-class certificate at the College Final Examination, have been granted exemption from sitting for the Intermediate Examination, and have been registered as students R.I.B.A. :—

H. H. Hill, Cork. H. Thornton, Dewsbury.

Final.—The Final and Special Examinations, qualifying for candidature as Associate R.I.B.A., were held in London from November 17 to 24. Of the ninety candidates examined, forty-five passed, and the remaining forty-five were relegated to their studies. The successful candidates are as follow :—

*A. W. Addison, Cambridge.
A. D. Aitken, Airdrie.
J. H. de Caynoth Ballardie, London.
A. F. Benjamin, London.
J. Boyle, Bolton.
J. E. Braithwaite, Leeds.
S. Bridges, London.
A. E. Bullock, Chiswick, W.
*M. Bunney, London.
J. Cocker, Altrincham.
T. T. Cumming, Reading.
E. J. Dixon, Stratford.
B. Drummond, London.
F. Dyer, Manchester.
T. S. Fraser, Hamilton, N.B.
*W. C. Green, London.
E. L. Hampshire, Streatham, S.W.
G. Hanson, Manningham, Bradford.
*C. H. Holden, Codicote, Welwyn.
*A. Hunter, Colwyn Bay.
A. H. Lamont, Edinburgh.
*L. W. C. Lorden, Hythe.
W. P. Marr, Kingsbridge, S. Devon.
W. K. McDermott, London.
D. Mitchell, London.
*H. A. Moon, London.
G. Morland, Croydon.
H. S. Morran, London.
*A. R. Myers, Edinburgh.
A. C. Notley, London.
D. M. O'Connor, B.A., B.E., London.
*A. J. Peyto, Welling, Kent.
S. C. Ramsey, Herne Bay.
W. H. Riley, Leicester.
H. Ryle, Brockley, S.E.
*D. A. Shaw, Camden-road, N.W.
J. H. Shearer, Exeter.
P. M. Stratton, Upper Mitcham, Surrey.
J. R. Sykes, London.
*P. Turner, Bradford.
*M. O. Type, Birmingham.
R. F. Wheatly, B.A., Bromley.
E. C. M. Willmott, London.
L. S. Wood, Wood Green, N.
H. E. Woodsend, Nottingham.

The following table shows the number of failures in each subject of the Final Examination :—

I. Design	31
II. Mouldings and Ornaments	22
III. Building Materials	12
IV. Principles of Hygiene	6
V. Specifications	11
VI. Construction, *Foundations, etc.*	11
VII. Construction, *Iron and Steel, etc.*	19

The Colonial Examinations.—Final and Special Examinations were held by the Institute during July last at Sydney, New South Wales, and at Durban, South Africa. The examination at Sydney was conducted by the Institute of Architects of New South Wales, and the examination at Durban by the Natal Institute of Architects. The following candidates were examined and passed, viz. :—

E. A. Agutter, Pietermaritzburg, Natal.
*J. Barr, Public Works Department, Sydney, N.S.W.

Election of Members.

The following gentlemen were then elected members, *i.e.*, as *Fellows* :—Messrs.

H. J. C. Cordeaux, East London, Cape Colony.
G. A. H. Dickson, Johannesburg, South Africa.
H. J. Helsdon, London.
A. R. Hennell, London.
J. N. Horsfield, F.S.I., Kingston-on-Thames.
W. G. Hunt, Kensington, W.
H. C. Kent, M.A., Sydney University.
A. W. Moore, London.
G. E. Nield, London.
J. Owen, Menai Bridge.
A. Rigby, Douglas, Isle of Man.
P. Robinson, Chapel Allerton, Leeds.
F. Rowntree, London.
E. S. Underwood, London.
A. F. Watson, Sheffield.
E. A. E. Woodrow, London.

As Associates, Messrs.

L. N. Barrett, London.
A. A. Carder, Clapham Common.
J. C. Cook, Bloemfontein, South Africa.
O. S. Doll, Brighton.
G. L. Elkington, London.
G. F. Ely, Liverpool.
C. L. Fleming-Williams, Clapton, N.E.
J. L. Fouracre, Plymouth.
L. U. Grace, London.
W. C. Le Maitre, London.
J. H. Markham, London.
L. T. Moore, Great Yarmouth.
Val Myer, London.
J. J. S. Naylor, London.
H. Prince, London.
E. Reid, Sunderland.
S. Searle, London.
N. Thomas, Plymouth.
J. W. Walker, London.
W. E. Watson., London.

* The candidates to whose names an asterisk is prefixed entered for the Special Examination, which is for architects in practice not less than twenty-five years of age, and chief assistants over thirty. Such candidates are exempted, by special resolution of the Council, from the Preliminary and Intermediate Examinations, and from submitting "Testimonies of Study."

Competitions.

Mr. Horace T. Bonner had given notice that he would bring forward at the meeting :—"That neither the President nor the Council, nor either of them, shall approach the promoters of any competition with the object of their nominating competitors; nor shall the President or Council appoint any professional assessor in any competition, unless requested to do so by the promoters of such competition." The motion was withdrawn.

The London Buildings Acts (Amendment) Act, 1905.

Mr. W. Woodward then opened a discussion on this Act, and remarked that those of them who had had dealings with the London County Council and other constituted authorities in London might have not unreasonably arrived at the conclusion that, not only were there ample powers under the Building Act of 1904 and the other by-laws and regulations to protect life and property in London and secure healthy occupation, but that if at least half of those powers were wiped out London architects, owners, and dwellers would be all the better for the operation. It had been said to him when he had grumbled that it at least put money into the pockets of architects, but he was certain he only echoed the sentiments of the architectural profession when he said that they did not desire to run up heavy bills against their clients for work which they know, as practical men, to be unnecessary. It was the loss of life in the Queen Victoria-street fire, due largely to the inefficiency of the London County Council fire brigade, which led to the Council bringing in the Amending Act of 1905, which was really an Act to afford means of escape from buildings in case of fire. Fortunately, the present Amendment Act had had some of its sting taken out by the fact that many of its provisions were referrable to the Tribunal of Appeal, as at present constituted under the Act of 1894. They might all, he thought, safely rely upon the Tribunal to uphold the reasonable provisions of the new Act and to clip the wings of arbitrary and unnecessary interference. On January 1 next they would be under the "London Building Acts, 1894 to 1905," and on that day "London" (the new Act went no further) would be subject to their several provisions. The interpretation of the word "owner" and the word "rackrent" would give rise, he thought, to some nice arguments hereafter which would bring grist to the mills of the lawyers, as all Acts of Parliament seemed designed to do. The interpretation of the word "plans" meant "plans, sections, and elevations." Why, after all the litigation and trouble they had had over the word "plans" in the Act of 1894, the new Act did not use the term "drawings" instead, he could not understand. The words and expressions in the new Act were said to bear the meaning assigned to them by the Act of 1894, etc., but, as those words and expressions had puzzled judges as well as architects, we could not be said to have gone very far in that direction. Dealing with the buildings affected on January 1, 1906, Mr. Woodward said that sect. 7 applied to certain new buildings, and that there must be deposited in the County Hall the plans and particulars thereof, together with a copy, which might be a sun print or photograph, of such plans showing the "means of escape proposed to be provided in connexion with such building." The Council was confined to one month after the deposit of the plans, enlarged to two months during the vacation between August 1 and September 14, to refuse to approve those plans, or to state conditions on which they would approve, but they were to give all their reasons for their refusal or conditions of approval, and if no such notice was given to the applicant within such period, approval by the Council was to be deemed to have been given. Subsect. (2) of sect. 7 was to provide for a certificate by the Council before the upper story of a high building was occupied and proper means of escape had been provided, and fourteen days were given to the Council to notify its refusal and the grounds thereof, which, if not done, the certificate was to be deemed to have been duly issued. Subsect. (3) of sect. 7 set forth in a most exhaustive manner

the sort of alterations or additions made to a building which would render the certificate issued by the Council void and of no effect; so that practically they would always have the Council with them. Sect. 9 began to operate on January 1, 1907, and took within its purview certain existing buildings. That purview was indeed an extended one, for, with the exception of a dwelling-house occupied as such by not more than one family, it included a very large number of the most important buildings in London. It took in par. (a) of subsect. (1), a "high building," or (b) "a building in which sleeping accommodation was provided for more than 20 persons, or which was occupied by more than twenty persons, or in which more than twenty persons were employed." A "high building" meant any building any story whereof is an "upper story," and "upper story" meant "any story the level of the surface of the whereof was at a greater height than 50 ft. above the level of the footway." It should be carefully noted that what was deemed a safe height in the Act of 1894, viz., 60 ft., had now been reduced to 50 ft., and that would bring in a very large addition to the number of existing buildings to be brought under the Council's domination. The *modus operandi* under that very important section appeared to be as follows:—The Council was to form an opinion as to whether or not those certain existing buildings were not provided with a proper and sufficient means of escape therefrom in case of fire," and it must be admitted that that power to form an opinion was a very wide one indeed. It, of course, gave power to enter buildings, to take plans, elevations, and sections of them, and then within the quiet solitude of Spring Gardens they would be subject to the critical analysis with which some of them were familiar. And if the Council could not bring within its notion of what was not "proper and sufficient" pretty well every building in London (with the exception of certain exempted buildings) over 50 ft. in height, or containing sleeping accommodation for more than twenty persons, then he was unaware of the attributes of the Council which in many instances had brought them into somewhat public prominence. When the Council had arrived at the opinion required, they might "at any time serve on the owner of such building a notice requiring him to provide such means of escape as could be reasonably required under the circumstances of the case," and he looked forward with interest to the glorious fights there would be over the interpretation of the word "reasonable." Curiously enough, no guidance as to the word was afforded under the interpretation clauses of the Act. The notice referred to was to "specify in detail the requirements of the Council." They had no ground for calling into question the ability of the Council to detail that notice, and the owner of the building, the subject of the notice, was to "do all such works and things as might be necessary to comply with the requirements of the Council under this section." It was true that the owner might, within twenty-one days of the notice, submit to the Council "alternative proposals," and if the Council accepted those he need not go on with the others. Subsect. (4) of sect. 9 did not authorise the Council to require any means of escape from any story of certain buildings other than the upper story. In other words, it would appear to be lawful to be burnt to death at a height of 40 ft., but not a height of 50 ft. Sect. 10, subsect (1), referred to projecting shops. The "projection" was, under the Act, "7 ft. or more beyond the main front of any building of which it forms part and in which any persons are employed or sleep." In all such cases the projection was to be provided by the owner "with a roof constructed of fire-resisting materials, not less than 5 in. thick." That clause would affect many hundreds of shopkeepers in the Metropolis, and it largely depended upon the administration of the clause whether an owner's business was to be stopped, or whether he might be permitted—as he thought later on in the Act would be permitted—to pug the ceiling joists from the upper surface and to render the roof fire-resisting, or whether he would be compelled to take off roof and ceiling to form the fire-resisting covering referred to. The clause gave permission to construct a "lantern light," or "ventilating cowl," in the roof, but they must not be less than 6 ft. from the main front of the building—what harm a "lantern light" or "ventilating cowl" would work in case of fire, if either were placed 3 ft. from such wall, he did not know. Sect. 12 dealt with dormer windows or doors opening on to roofs, or other proper means of access to roofs, and he did not think that any reasonable objection could be urged by architects to that clause. Sect. 13 dealt with the "conversion of buildings," which really meant that practically no alteration could be made in a building which would render it not in conformity with the provisions of the Act without the consent in writing of the Council. It was another section which, to his mind, entrenched upon the domain of occupancy, and it might be stretched to any length by a "busy body" controlling authority, as the section went on to say that "convert" shall include any change of user, whether involving any structural alterations or not, and notice of such conversion shall be given to the district surveyor by the owner or occupier of the building to be converted." Sects. 16, 17, and 18 dealt with district surveyors, their duties, and their fees, and sect 17 converted, he thought, district surveyors into policemen or detectives. Sect. 22 referred to appeal to the tribunal, which might be made within two months after the owner might be dissatisfied with the proceedings of the Council under certain sections, and he might add, with pleasure, that the power to so appeal extended to several important sections. Sect. 23 was one which more nearly upset the idea of an Englishman that "his house was his castle." It gave power to the Council, their officers, and district surveyors, to, at all reasonable times, and after reasonable notice, to "enter, inspect, and examine any building, structure, or premises to which he might have reasonable grounds for thinking that the provisions of that Act applied." Judging by the prying proclivities of some sanitary inspectors, who very quickly formed what were, to their minds, "reasonable grounds for thinking," he trembled for the man who had a building more than 50 ft. high from the pavement, or who had premises which afforded sleeping accommodation for more than twenty persons. Sect. 24 dealt with penalties for non-compliance with the provisions of the Act, and he commended the dominating paragraphs of that section to all would-be offenders who might think that they could successfully evade the thoughtful care of their protectors. No! the lawyers had been at work there, as one gathered by the use of the words "knowingly and wilfully," and he respectfully cautioned every "owner" against "knowingly and wilfully" doing anything in this world without the consent of the Council. Sect. 28 was marginally described as "for protection of Inns of Court," and that was the only piece of real humour which he had detected in the Act, because it turned out that the Honourable Societies, respectively, of the Inner Temple, the Middle Temple, Lincoln's Inn, and Gray's Inn should be exempt from the operations of the Act; in other words, the whole of the lawyers occupying those inns might be left to be burnt to death under the subheading of "Protection." They in that room knew a great many lawyers in those inns, and they raised their voices against selecting them to remain victims of risks which no other members of the community might incur. There were several other exemptions from the Act which, he thought, ought not to be, because it seemed as if the rich owners of London could secure exemption from those serious inroads upon property. The first schedule of the Act dealt with fire-resisting materials, and he was somewhat surprised to find "granite" in the list. Of course, there was not a material in existence which would not "go" in a furious fire, and granite would probably be the first to split up and lead to a catastrophe. In the case of hard woods, the thickness was reduced from 2 in. to 1¾ in. finished thickness, but he had always thought that in staircases the wall strings certainly need not be as thick as the other parts. In subsect. (7) of the schedule certain squares of glass specified are not to exceed "16 sq. in."—whether they mean a square 4 in. by 4 in., or a square 1 ft. 4 in. by 1 ft. 4 in., he did not know. The second schedule dealt with fees payable to district surveyors, and he thought it would be generally conceded, bearing in mind the status of many of our district surveyors, that however much money the Council might have wasted or might waste, they were certainly not wasting much on the fees to be paid to district surveyors. They must remember that it was an Act, and not a Bill, and that they must all do the best they could with it. Its success or failure would depend very largely upon the manner in which it was administered, and they in that room would not condemn the administration until they had had a fair trial. The administrators had to keep the spirit of the Act, rather than the letter, before them, and much trouble would be saved. As to the drafting of the Act, he thought it was much clearer, on the whole, than many other Acts, but it would have been still clearer if it had been punctuated. Why Acts of Parliament should not be made more intelligible by punctuation, Heaven only knew. As regarded the general provisions for escape by roof, he thought power should have been conferred to compel adjoining or recalcitrant owners to consent to ladders being attached to their premises. They all trusted the Council to administer the Act in a reasonable manner; if they did they would have the assistance and co-operation of all architects; if they did not they must look forward to constant attempts at evasion and to bitter litigation, which would neither protect lives nor advance the real interests of the biggest metropolis in the world. In concluding, the lecturer said that he would like to add that a well-written leading article on the new Act appeared in the *Builder* of November 18 last, the reading of which he commended to all those who had not yet perused it.

Mr. J. Douglass Mathews said that, as the Chairman of the Committee appointed to deal with the Bill, it was perhaps right that he should say what had been done. There was scarcely a point which had been touched upon which had not received the careful attention of the Committee of the Institute, as well as the full attention of the Parliamentary Committee. He might say that the procedure before Parliament was somewhat different to what had been anticipated, as the evidence was heard on the preamble, whereas it had been thought the evidence would have been heard on the clauses. A great many days were taken up with the hearing of the preamble of the Bill, and then the clauses were rushed through. The Institute took a strong stand on the point that the County Council were the fire authority for London, and they maintained that the first duty of the Council was to provide every possible means of escape from outside the building. He had a strong case on this point, for the statutes of the County Council showed that, consequent on the improvement in the fire-escape apparatus owing to the attention called by the Queen Victoria-street fire, the loss of life from fire had materially decreased. He felt that there was little doubt that this lamentable loss of life was due to the fact that the brigade had not a ladder long enough to reach the windows, and that no staircase in the world would have saved the poor creatures who perished. Mr. Woodward mentioned the Tribunal of Appeal, and that was a question which was keenly fought before the Parliamentary Committee. The Institute felt strongly that the tribunal should be duplicate, but, unfortunately, although their counsel had attended every sitting of the Committee, he was not in the Committee-room when this particular clause came on, and so they lost their chance. With regard to plans and drawings, lawyers always said that everything was a plan, and they could not get them to understand differently. In this new Act, however, there was a considerable reduction in the number of plans required, and it was not for want of urgent representation that the number of plans required was not less even than it was. He thought, however, that everyone believed the County Council meant to carry out the Act in a fair spirit. They saw evidence of this in the administration of the Factory and Workshops Act, which had been much easier in the past few years than formerly. Of course, the new Act was a serious one, and would be a difficult one

to administer, but if they were trying to prevent loss of life it was no good making an Act of Parliament which would be perfectly useless, and, therefore, it was impossible to do without stringent requirements if the Act was to be of any use at all. As to the Act itself, the plans to be deposited were only those which showed the means of escape; and, with regard to the certificate, unless they heard from the Council within a specified time the approval of the Council was to be taken as granted, and that saved a great deal of worry. As to the change of occupation, it must be remembered that a building might be used for the storage of inflammable material, and what might be a safe thing one day might be a very unsafe thing later on, and, therefore, that was a thing which must be dealt with. It was true that the height of the building was reduced from 60 ft. to 50 ft, and that was due to the fact that the fire brigade distinctly pointed out that, although it was possible to carry hose up 60 ft., yet the power of the water was greatly lessened. From a computation made it was shown that the number of buildings between 50 ft. and 60 ft. high was only a small percentage compared with the whole, and that no great hardship would result from this. Then, so far from the County Council forcing requirements, the owner had the right to submit alternate suggestions, and, therefore, it was for the Council rather to approve than to require, which was a very important matter. The reason why the clause restricted a lantern light in the roofs of projecting shops to not less than 6 ft. from the front was that, in the case of such shops projecting some distance, the firemen should have the opportunity of placing their ladders against the front of the house. Then, in the case of a large drapery establishment, the fire would generally occur in the lower floor and run up towards the roof, and the roof was the only means of escape for the inmates, and, therefore, it was required that the roofs should be fire-resisting. They agreed that pugging might be used so as not to interfere with the ceilings of the shops. The glass specified in the schedule was 4 by 4. As to the Englishman's house being his castle, he was afraid they had given up that idea many years ago. Still, the object of the Act was to prevent loss of life by fire. He did not agree that the district surveyors would be policemen, and what weighed with them was that the superintendence of the matter had better be in their hands than in the hands of an officer of the County Council. As to the Inns of Court, if the lawyers like to risk their lives that was their own business, but the exemption was in the old Act. The Institute took up the position of looking at the matter from a general point of view, and they tried to get the words in sect. 9 as an amendment, for it was obviously absurd to refuse the clauses in warehouses where practically the whole of the employees were on the ground floor. The Bill was an understandable Bill, which was something, and he hoped it would be administered in a fair and reasonable way.

Mr. E. A. Gruning said that, as one of the members of the Tribunal of Appeal, he thought it right to say how deeply they appreciated the loyalty of the Institute in supporting the Tribunal before the Committees of the Houses of Parliament in the attacks made by the London County Council as to their impartiality. Mr. Mathews had mentioned the fact that it would be well if the Tribunal was duplicated, and the Tribunal themselves felt that this should be so, and they were now making arrangements amongst themselves to carry this out, and were asking the different bodies who nominated the members of the Tribunal to appoint substitutes. He believed that this would be done in due course. There was no difficulty about this, because for years before he was a member of the Tribunal he held the appointment from the Institute as a substitute for the late Mr. A. Cates.

Mr. Woodthorpe quoted a number of sections of the Act, and remarked that no doubt the Act would be a serious one for many owners in London. With regard to the fire-resisting roofs for projecting shops, it would seem that these could be put in in any way they liked so long as they got what was fire-resisting. The provision for a trap-door, or dormer window, leading to the roof was not a serious matter. He had a close knowledge of a part of the City devoted to the soft-goods trade, where a great many girls were employed, and he was confident that there were many buildings in that district in which, should a fire occur, the inmates would only have a remote chance of escape. In the Queen Victoria-street fire several youths did escape by the roof, but the fire went through the trap-door so quickly that this means of escape was cut off. It must be a serious consideration for all of them as architects to provide that the roof-outlet should be free from the draft of the staircases. He knew that Mr. Woodward had strong views as to public bodies, and would like to have a Building Act of his own, but, as an architect himself, he had never had any trouble with the London County Council. With regard to the point raised as to the conversion of buildings, he might mention that that morning he had a case before him of a building built for a warehouse, which it was proposed now to utilise to give sleeping accommodation for 300 unemployed persons. What were they to do in a case like that if they had no power to deal with the building?

Mr. E. T. Hall said his experience had been that the London County Council was always exceedingly fair. With regard to the Bill which the County Council proposed and the Act which was eventually passed, there were many and great differences. He represented a number of clients before the Parliamentary Committee, and the great objection they had was to any alteration in the Tribunal of Appeal. He urged upon the Committee from the first that architects and all who were interested in saving people from risk of fire could have the greatest possible confidence in the tribunal, because they were not doctrinarians, but were gentlemen who were engaged in everyday work, and knew what was wanted and the proper way to deal with it, and, consequently, substantial justice was always done. It was a great pleasure for him to see that both Houses of Parliament took that view. He would point out also that the County Council had a measure of compulsion brought upon them to bring in this Bill. It was not a faddy Bill, but was due to some pressure brought upon them by the Government, and he thought they were justified in doing this. As the Act now stood, although it was strong in many of its provisions, yet he did not think it would hurt any of them who built a new building, because he was certain no decent architect would nowadays fail to put in every requirement in the Act. Of course, a difficulty always arose when they were dealing with old buildings. When before the Parliamentary Committee, the County Council said the requirements would not put owners to any great expense, and talked of a staircase costing 150*l.* or so. He was able to show the Committee that a County Council staircase which he had to put in a building in Wood-street cost about 3,000*l.*, and the average cost of such staircases in City buildings was not less than 500*l.* or 600*l.* Another thing which he strongly urged on the Committee was to minimise the number of plans that architects had to give. He put it to the Committee that it was to no one's interests to have a large number of plans. The architects did not like it, and found it very difficult to justify the expense to their clients. The plans necessary to deposit had now been brought down to a reasonable number, and he did not think they had a great deal to complain of in this respect, because any authority which had to deal with a building must have the necessary information to see what were the means of escape. As the Bill was originally drafted, they might have been called upon, not only to give every drawing, but every detail, and in some cases this would have meant hundreds of drawings. One alteration made in the Bill before Parliament was of great importance, and this was the clause dealing with the outlet to the roof. As the Bill was first drawn up it was provided that every house which was more than one story in height should be provided with the means of escape from the roof. Of course such a provision as that was wise in regard to buildings in the heart of the City of London, but, it must be remembered, that Bill applied to the whole of London, from Hampstead to the Crystal Palace. It was absurd when they were dealing with suburban houses situated in perhaps one acre of land to say that there should be means of escape in the roof for a house of two stories. It was well asked by a member of the Committee: "What is to happen when they get on to the roof?" He answered that he supposed they would stop on the roof until they slipped off. No one would dream of getting on the roof of a house at Sydenham-hill to escape from fire. As the section was now drawn, the house must exceed two stories, and must be above a certain height. Even then in some cases it would certainly be absurd to make such provision for escape, but, taking it all round, and having regard to the responsibilities of the County Council, he did not think the Bill was very exacting if it was reasonably administered, and he believed that this would be the case.

Mr. A. Maryon Watson said that Mr. Mathews told them that the Institute directed their criticism to the fire brigade, and he mentioned the loss of life from fire in London in 1898. According to the evidence of Captain Hemphill, in that year the expenditure on the fire brigade from the rates was 197,000*l.*, and in 1903-4 the expenditure had risen to 239,000*l.* It was stated by Captain Hemphill that they had got the fire brigade as efficient as it could be got, and any further expenditure on the brigade would not save more lives. With regard to the reduction in the height of protected stories from 60 ft. to 50 ft., a great point was made by Captain Hamilton. Captain Hamilton drew a distinction between what he called "life-saving ladders" and "fire-fighting" ladders, and said that, with life-saving ladders, they could only save life slowly at 40 ft. perpendicular height; at 50 ft. they could save life with great difficulty; while above that height the saving of life was a sort of forlorn hope. It was on that evidence mainly that the height was reduced from 60 ft. to 50 ft. He was not quite sure that the point as to the parapet had been made clear. Under the old Act they had to have an access to the roof in a building of 30 ft. in height if there were a parapet. Now in a building over 30 ft. high they had to have access to the roof *and* a parapet or handrail. With regard to the exemption of low buildings in which there were not more than two families, even in that case if the building happened to be behind a projecting shop it had to have means of access to the roof.

Mr. George Elkington said that the consideration of the Act had already been forced upon many of them who practised in the City, not only in regard to new buildings, but also in regard to the question of contracts as regarded old existing buildings. It would be interesting to know what the position was as between the landlord and the tenant with regard to this Act when it came into operation. He thought that those of their colleagues who were district surveyors and members of the District Surveyors' Association should try and get somethink like a general consensus of opinion as to what would be necessary in existing buildings to render them fairly safe. He did not mean that they should draw up hard-and-fast rules, but they might have a kind of understanding, so that when an architect or a contractor went to a district surveyor they would be able to get some indication of what would be required. He understood that the County Council were not proposing to formulate regulations or by-laws, and that rendered it more necessary that they should know what was desirable. In the case of a factory they knew what would be required, but, in the case of those high buildings, would it not be sufficient to have one ordinary staircase so isolated on each floor that fire would not run up it and get to the roof, or would it be held necessary to have a second exit? Those were questions which it would be well that district surveyors should come to some decision upon to help them. Mr. Woodward said that the Act did not attempt to define what the word "reasonable" meant. Perhaps it was well that there should be no definition, or otherwise it might be that what the County Council thought right was reasonable, and what anybody else thought right was not reasonable. It was quite possible for them to thoroughly appreciate the courtesy they

met with from the staff of the County Council without feeling in sympathy with the extreme views of that body in their public capacity.

The Chairman said that he did not feel qualified to speak much on the subject. He had had to deal with the London County Council, and he must say that he had found them exceedingly reasonable. They all knew how difficult it was to put anything connected with building into legal form, and the difficulty must have been much more than in the drawing up of the ordinary Act. The Act appeared to have been drawn up as well as possible, and there was reason to believe that it would be administered in a perfectly reasonable way, so that it should not bear too heavily on architects or property owners.

A vote of thanks having been accorded to Mr. Woodward, the proceedings terminated.

MAGAZINES AND REVIEWS.

In the *Art Journal* Mr. Paul Waterhouse brings to a conclusion his most interesting and far too short series of papers on "Painters' Architecture." He had purposely intended to omit those painters who were actually architects, but makes an exception in favour of Raphael and his graceful temple in the background of the "Marriage of the Virgin," of which he suggests, with every appearance of probability, that the source is to be found with Brunelleschi or Bramante (Bramante we should say by preference). But why does Mr. Waterhouse say the building is a duodecagon? (Query—"dodecagon"? At least "duodecagon" is not in our English dictionary.) It appears to us to be a sixteen-sided building. The point of sight is on the central axis of the picture, and the building placed exactly central. Seven sides are shown, and the two sides parallel with the axial line of the picture would not show any face to the front of the composition. There are seven visible faces, the middle one in elevation, the three on each side on the cant. The next face on each side would be that at right angles with the central face, and then we should have the remaining seven corresponding to the seven faces visible in front. Even if we suppose the side limit of the plan to be an angle and not a face, it makes fourteen sides; we do not see how to make twelve out of it. Paris Bordone's "The Doge and Fisherman" shows a curious piece of nondescript classic architecture—columns with Romanesque capitals and an entablature breaking over them, and elliptical arches above the entablature; but the whole serves to give a fine scenic setting to the picture. The two most remarkable examples given are, the extraordinary and painstaking realism of Gentile Bellini's representation of St. Mark's, forming the background to "The Procession in the Square of St. Mark"—a realism which is emphasised by the insertion of a photographic view of St. Mark's on the same page; and the powerful and poetic conception of a Gothic tower which forms the background to John van Eyck's drawing of "St. Barbara." A reproduction of this forms the frontispiece to the number, and a most remarkable conception it is in the way of ideal architecture. Other articles in the number are a short one by Mr. Addison McLeod on some unpublished drawings by Michel Angelo; one by Professor Melani on the Chateau Sforzesco at Milan and its collection of art treasures; and one by Mr. A. G. Webster, with sketches by the author, on the evidently charming and picturesque little old-world town of Burford.

The *Burlington Magazine* commences with an article by Professor Baldwin Brown on the interesting subject—"How Greek Women Dressed." Some people in London may remember how the subject was taken up a good many years ago by a lady, then well known in London society (now dead), who gave a Greek dress dance at her house, where all the ladies went in ancient Greek dress (the men were allowed to go in "swallow-tails"), and how attractive some people looked in it; one lady in particular gave the impression of having just walked out of one of Leighton's pictures. Professor Brown gives the analysis of the formation and composition of the dress in a very complete manner, remarking that "the Greek dress is one of the most typical products of the Hellenic genius. It exemplifies better than almost anything else the capacity of this gifted people for producing the most beautiful effects by the simplest means." We might add that one cause of the beauty of Greek dress is that it is itself what may be called a typical form of dress; it seems to be dress in the abstract, not dress which is the fashion of a decade or of a generation. Miss Lina Eckenstein contributes an interesting article on "The Purpose and Value of Ancient Egyptian Art." Her idea as to the purpose of Egyptian art is that it was to give a faithful representation of fact, in which the artist "was always clear and direct in his utterances. At no time did he drift so far away from life as to practise art for art's sake." This may be in the main true, though it is perhaps put in rather too sweeping a sense. There is at least a great deal of symbolism in Egyptian art which has the ideal element in it; look for instance at that remarkable incident in the set of drawings recently on view in the British Museum, of the two leopards looking opposite ways on each side of a kind of small altar, and labelled "Yesterday" and "To-morrow." And are not the temples and the avenues of sphinxes, in their way, "art for art's sake," and the bracelets which are among the illustrations to Miss Eckenstein's article? It is a good thought at the close of the article, that part of the interest of Egyptian art for us lies in the fact that it influenced the art of the shores north of the Mediterranean, and "thus in being brought into contact with the productions of ancient Egypt we are confronted by that which has helped to mould our taste." The Egyptian chairs, both painted and actual ones, are a witness to this; imitations of them (some have been made) would suit us perfectly well for modern use, both in regard to taste and convenience. Mr. C. I. Holmes contributes an article on Richard Wilson, whom we think he a little over-rates. There is a calm beauty and often nobility of sentiment about Wilson's landscapes, but we cannot regard him as one of those who can be classed among the great landscape painters; it can only be said of him, *proxime accessit*. We have not followed out the changes in his work, but Mr. Holmes is probably right in saying that there is a considerable difference between the landscapes painted in Italy (where he was for six years) and those after his return to England, partly from the loss of the atmosphere of Italy, partly because he lived in London, was very poor, and probably got little opportunity of painting direct from Nature. His "Aquæ Albulæ," a reproduction of which forms the frontispiece to the magazine, is a beautiful composition, full of the melancholy spirit of what Ruskin called that "sad cemetery shore." Mr. Ingleby Wood contributes an article on the subject of what he calls "Mediæval Architectural Refinements," a subject which will probably be dinned into us for some time to come by industrious propagandists; but as Mr. Wood was the secretary for getting up the exhibition of Mr. Goodyear's photographs at Edinburgh, he must naturally be regarded rather in the light of an interested advocate than an impartial critic. As we have touched on the subject on another page of this issue, we only remark here that among "architectural refinements" he counts the lowering of the second arch of the crossing at Siena "in order to give a false perspective." We must not be too sure that this was the object; but if it was, instead of an architectural refinement we should call it an architectural vulgarity, which would offend a sound taste when found out. We observe that Mr. Wood remarks that the volume of Pennethorne was at its appearance looked upon "as the vaporising of a crank." It was not quite as bad as that, but it is nevertheless the fact that to a great extent Pennethorne *was* a crank; that he pushed his theories a great deal further than they would bear (he went to the absurdity of maintaining that the Parthenon was designed to be viewed from only one particular point on the Acropolis, and was only correct when seen from that point); this was shown in the review of his work which appeared at the time in our columns, and with such effect that the publisher wrote a bitter epistle to the then editor of this journal, the late Mr. Godwin, complaining that "he had stopped the sale of the book." We wonder whether Mr. Wood really knows Pennethorne's book, and all that his views imply.

The *Magazine of Fine Arts*, the first number of which reached us too late to be included in our last month's notice, promises, to judge from this, to be an excellent illustrated art publication. It again includes an article on Richard Wilson, who seems to be getting specially taken up just now by writers on art; and there is no doubt that by the public he is totally underrated if not unknown—many people who consider themselves to take an intelligent interest in pictures do not even know his name, and it is well that more attention should be drawn to him. Sir James Linton, who writes the article, thinks that what is against him is that he could never sufficiently get rid of certain conventions in landscape-painting; in fact, his pictures are compositions rather than nature, except when he was painting direct from nature in Italy. When he returned to England he painted English landscape in the Italian manner, and there is always more or less a feeling of unreality about it. We are glad to see among the illustrations to the article the two small pictures in the National Gallery in which Roman ruins form the prominent subject—"Hadrian's Villa" and the one called "View in Italy," part of a ruined vault with a battered statue leaning up against the broken wall. They are full of the spirit of Roman decay. Mr. Laurence Housman writes an article on Donatello as "the great forerunner of modern sculpture." We like his first sentence: "Perhaps the most perfect proof of artistic form is to be found in the serenity with which it survives the period of its innovating force." Other articles are on "Jordaens," by Professor Rooses; on "Sicilian Woven Fabrics," by Mr. A. F. Kendrick; on "Peruvian Pottery" (an ugly stuff it is), by Dr. Max Schmidt.

The most important building illustrated in the *Berlin Architektur-Welte* is the Imperial Patent Office, by MM. Solf & Wichards; a pleasing building in a kind of quasi-Elizabethan style with no vagaries about it; its extensive plan has been well fitted on to a very irregular site. The Swinemünder bridge, a steel bridge of which Herr Krause is the engineer and Herr Möhring the architect, is an awful affair as far as æsthetic is concerned, but we in England have no right to criticise German bridges much in this respect. The concluding illustrations show some furniture in the new style (but not so "new" as some examples) designed by an architect, Herr Nachtlicht, some of which is ingenious and not unpleasing.

The *Architektonische Rundschau* gives an illustration of the Rathaus at Charlottenburg, by MM. Reinhardt & Süssenguth, of the most terrible detail, to which no mere words can do justice; one feels grateful that, with all our modern vagaries in architecture, it would hardly be possible, to find anything in our cities as bad as this; at least we never have. Vienna seems, more than Berlin, to keep some dignity of style and avoidance of mere eccentricity; the large mansion in the Auhofstrasse, by Herr Van Neumann, if ornate, is also stately; it would have been better if the four circular angle turrets had been carried down to the ground; they hang rather heavily on the building. A "Grabmal," monument over a tomb, designed by MM. Ziesel & Friederich of Cologne, has some of the solemn fancifulness which Germans know how to impart to such monuments.

The *Monthly Review* contains a very well-written article by Mr. Edward Hutton on the paintings in the Prado Gallery at Madrid, with some good comparative criticism on the art of Titian, Velasquez, and Raphael. We entirely agree in his fine and eloquently expressed appreciation of Titian, the greatest of all painters—"always expressive, always at the height of the situation; nothing has come from his hand that does not live—legions of figures, men and women and children splendidly naked, beautifully clothed, horses and dogs, and bulls and trees and mountains, and sea. He is like a natural force in his profound energy." On the Raphaels at the Prado Mr. Hutton throws a good deal of doubt, regarding them as at all events not up to the painter's reputation.

The *Nineteenth Century* contains a most interesting and valuable article by the Rev. E. Ledger (Gresham Lecturer on Astronomy) on "The Sun and the Recent Total Eclipse." It forms a kind of summary, in a form intelligible to those who are not scientific astronomers, of what is already known about

the sun, and what are the principal means of investigation which are being pursued to enlarge, by slow degrees and long and patient observation, the present narrow boundaries of our knowledge. It is an article that should be generally read, for all educated people, whether or not their general pursuits are scientific, should endeavour to keep their minds in touch with the scientific discoveries of the day. In the case of the sun, the problem is so vast, and the means of investigation depend on such delicate and recondite experiment, that there is quite a romantic interest in the subject.

In the *Century* the third article in the series on "Historic Palaces of Paris," by Camille Gronkowski, is of considerable interest; it describes the Hôtel de Crillon, which outwardly forms a part—the left-hand part—of that noble façade of Gabriel's which stands at the north end of the Place de la Concorde. The history of the building is traced, and a description given of its interior decoration, which appears to be of the highest order of art of the period. A curious point in the history is that, in order to complete the architectural aspect of the Place at the bidding of Louis XV., who was impatient to see its effect as a whole, Gabriel's elevation was at first erected as a façade only, the actual buildings in its rear being carried out in a more leisurely manner afterwards.

In *Scribner* Mr. F. Fowler, under "The Field of Art," discusses what he calls "The Lesson of Bouguereau." He seeks to know why the apparent perfection of Bouguereau's work did not meet the approval of his contemporaries in art. After a good deal of disquisition, he puts it, rather well, that Bouguereau felt life pictorially, not really. He made pictures of things, not characteristic impressions which were felt as human situations humanly observed. A peasant was to him a pretty object placed in a pretty scene, not a human being of the soil and living on the fruits of his labour." Yet some of Bouguereau's peasant children are charming, and remind one a good deal of Reynolds's and Gainsborough's children. They are much better than his classical subjects. We might say, to put it still more shortly, that Bouguereau was a painter of very complete technical power without a touch of genius. An article on "Holbein," by Mr. Kenyon Cox, is an excellent piece of critical analysis.

The *World's Work* contains an article on "The Incandescent Electric Lamp," describing the process of its manufacture; on "The Choice of a Motor-car," by the Editor; and on "The Lebaudy Airship," by Mr. L. Ramakers, which, however, though it gives a most favourable account of the performances of the balloon, does not give any very clear information as to its principle of working. Mr. Lewis Hind continues his papers of artistic travel under the title "The Education of an Artist." We do not think the imaginary narrator rises to the height of Raphael's San Sisto Madonna. He has taken up the now usual enthusiasm for Velasquez, which we share to a great extent. Velasquex was a greater master of the art of painting in itself—of texture and colour and character—than Raphael; but after all, that Madonna and Child represent a conception of spiritual beauty that was beyond Velasquez.

The *Antiquary* contains a good article by the Rev. W. G. D. Fletcher on "The Tower of the Abbey Church, Shrewsbury," with a long quotation from the report of Mr. Brakspear, the architect to whom the repair of the tower was entrusted. The writer comments on the neglect of Shrewsbury, especially by American visitors, who "land at Liverpool, pass a night at Chester, and the next day journey on to Stratford-on-Avon, little dreaming that in passing through Shrewsbury station they are leaving unseen a town full of the most exquisite bits of antiquity that can anywhere be met with." Mr. A. Chas. Jonas writes an article (with an illustration) on the Whitgift Hospital at Croydon, partly as a protest against the local vandals who want to destroy it, having already destroyed all its surroundings.

The *Gentleman's Magazine* contains a very well-written and picturesque article on "The Evolution of a Railroad Metal," detailing the whole process from the "pig" state to the final rolling. It contains definite information, imparted in such a way as to render it interesting to general readers. Under the title "London Laid Open," Mr. J. H. Macmichael, who appears to have been for many years a collector of Roman and other relics out of London excavations, gives an account of his method and of some of his numerous finds. We gather, from the closing notes under the usual heading Table-Talk, that the present editor takes leave of his readers, and that the magazine appears in January in a new form and new management.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary fortnightly meeting of the Architectural Association was held on Friday, last week, at No. 18, Tufton-street, Westminster, Mr. John Murray, Vice-President, in the chair.

The minutes and nominations having been read, the following gentlemen were elected members of the Association, *i.e.*, Messrs. Paul Faraday, P. R. Fincher, K. Dalgliesh, C. W. Long, H. W. Spark, T. C. Black, C. G. C. Payne, H. Griffin, jun., H. Sudlow, F. C. Barrow, A. G. Taylor, and Flint-Browne.

New Building Fund.

The Chairman then announced the following additional donations to the Building Fund, *i.e.* :—

Chas. Wall, Ltd.		£25	0	0
E. B. Nixey		2	2	0
F. A. Forster (double subscription)		1	1	0
F. J. Lloyd	do.	1	1	0
F. E. Lloyd-Downes	do.	1	1	0
E. Boehmer	do.		10	6
J. W. Denington	do.		10	6
J. K. Hunter	do.		10	6
Geoffry Lucas	do.		10	6
C. A. Sharp	do.		10	6
A. Dunbar Smith	do.		10	6
W. C. Waymouth	do.		10	6

The Chairman announced the President's "At Home," to be held at 18, Tufton-street, on December 8, at 8.30 p.m. Morning dress will be worn.

Mr. A. Maryon Watson, hon. secretary, announced a Camera and Cycling Club meeting on December 19, when a paper will be read by Mr. Francis Bond on "Bay Design in the English Mediæval Churches."

Turkish Architecture.

Mr. E. F. Reynolds then read the following paper on "Turkish Architecture" :—

Mr. President, gentlemen,—The student of Turkish architecture is confronted by a somewhat unusual initial difficulty. He finds that there are few authorities on the subject, that they give but meagre information, and, if he further pursues his inquiry, that much of the information is inaccurate and misleading. The slightness of the knowledge to be gleaned from books is assuredly not due to any lack of intrinsic interest in the subject, but rather to lack of opportunity. For if the student proceeds to Turkey and attempts to study the buildings themselves, his difficulties only increase, and, indeed, become well-nigh unsurmountable. Religious fanaticism and political suspicion have almost altogether closed Turkish doors against the inquisitive architectural infidel, and only by the most exceptional good fortune may the right to enter, sketch, and measure be obtained. Through the courtesy of the Royal Institute of British Architects and the British Embassy at Constantinople such good fortune was my own experience, and, in company with Mr. J. B. Fulton, I was able to give some study to the subject on which your Council has invited me to speak.

The Mohammedan religion has been as powerfully represented in building as the Christian religion, and Turkish mosques represent the most impressive and a most characteristic phase of Turkish architecture. I propose to confine my remarks to this aspect, entirely disregarding the palaces, the castles, the bazaars, and the domestic buildings which show other aspects of the same art, and, further, to deal almost exclusively with the great mosques of Constantinople.

Brûsa.

Perhaps the best way to approach the subject will be to take a preliminary glance at two mosques at Brûsa, the Turkish capital in Asia Minor before the conquest of Constantinople. Ulu Jami, the Great Mosque, represents a type of plan derived from the original courtyard type. The rectangle of the building is divided by massive piers and arches into twenty square bays, each covered with a cupola set on pendentives, except one central bay, which remains open to the sky. The construction is of brick, the piers being square on plan and the arches pointed in outline; and the internal walls, originally covered with tiles, are now whitewashed and decorated with writings from the Korân. Light is introduced by windows in the bases of the cupolas, and the interior, with the cross-views half blocked by the forest of great piers, is heavy, though picturesque, in effect. A free-standing minaret flanks each side of the façade, and a later portico shelters the central entrance.

Yeshil Jami, the Green Mosque, was built in 1420, and represents a complex variety of the later cruciform type of plan. The plan is complicated by the fact that the mosque was built on the site of a Byzantine church, and also because it was the royal mosque, and, therefore, included special chambers for the Sultan. The arms and the crossing are covered with domes, the square compartments being reduced to the circle by means of simple stalactite pendentives. The walls, internally and externally, are faced with marble masonry, and the windows, niches, and doorway of the façade are richly carved with a decoration of very advanced character, including stalactite work and arabesques in low relief. The internal gallery and alcoves for the Sultan are sumptuously covered with dark-blue tiles, threaded with the gold, green, and white of slightly raised patterns. The whole building is a storehouse of early Turkish art, full of that Persian influence which was the fountain-head of Saracenic art, just as Greek influence had been the vital source of classical art.

These two mosques may be taken as typical of Turkish building prior to the conquest of Constantinople, differing from other Saracenic work of the time only as varieties of the main stock, closely related to the mosques of Egypt and Persia, and perfectly normal in development.

Santa Sophia.

But, with the conquest of Constantinople, the natural growth of Turkish mosque-building was radically modified by a new influence—an influence strong enough to produce an almost complete change of flower and fruit. This alteration was the effect of a single building—that Church of Santa Sophia which had already exercised so profound an influence in the history of art, and which was now to lend its vitality to an alien creed. Rumours of the splendour of the church had long been current in the East, and Mohammed himself had prophesied its conversion to a mosque. The Turks, therefore, regarded it as a predestined possession, and it may be that we owe its preservation to this view. But, not content with its possession, the Turks emulated its qualities, and henceforward they founded all their great mosques on its model, disregarding their own traditional forms or altering them in unison with their new ideal.

The change was probably less due to real æsthetic appreciation than to a desire to invest their own religion with an easily-adapted magnificence. Mohammedanism was a militant religion whose fast rising power had outstripped its expression in outward grandeur, and the possession of the greatest church of the East gave the Turks a new scale and model for its architectural exhibition. But, further than this, the readiness and completeness of the change were in large measure due to the national character. The Turks were a military, rather than an artistic, race, and they were always dependent on other nationalities for the fulfilment of their æsthetic needs. The Persian quality of their mosques at Brûsa has been mentioned, and at Constantinople their most famous architect was an Armenian. The Turks themselves had little of the subtle instinct of the artist; to them art was a slave to minister to their pomp and luxury, rather than a spirit to be sought with toil and glad self-sacrifice. A close parallel may, indeed, be drawn between the character of the Turk and the Roman, and the comparison is rendered more striking by the similarity of experience in their contact with the art of another

race. But, whereas the Romans had adopted Greek forms for the decoration of their own structure, thereby stifling the expressive evolution of its true qualities, the Turks, on the other hand, adopted only the plan-type of Santa Sophia, leaving themselves free to adapt and develop it in accordance with their needs, and to clothe it with fresh expression by a thoroughly Saracenic mode of decoration.

But Byzantine and Turkish art may not be regarded as altogether alien to each other. In Byzantine art there had been a strong infusion of Eastern influence, so strong, indeed, that, as compared with Roman art, its qualities are distinctively Oriental; and although that influence was qualified by its infiltration through a Greek race, yet it preserved much of its original character. In return, the ascendant power of the Byzantine empire and the fine quality of its art had given a reflex radiation which nourished the roots of the mediæval Saracenic school among others. In their westward advance to Constantinople the Turks passed over soil which was fertile with Byzantine influence, for Brûsa was a completely Byzantine city when they entered into its possession; and this could not have been entirely without effect on a race of the Turkish temperament. Hence there was already a certain affinity between Turkish and Byzantine art—an affinity showing itself in broad tendencies rather than special particulars.

Ritual.

The requirements of Mohammedan ritual are simpler than those of Christian ritual. The mosque proper is preceded by a forecourt, which gives additional space for the crowds of the faithful who assemble at the great festivals, and at the centre is placed a fountain of ablution. The mosque itself provides a sheltered place for prayer, and, so long as sufficient floor-space is provided, its general shape may vary very considerably. A small niche in the centre of the eastern wall indicates the direction of Mecca, but it has no such ceremonial significance as the altar in the Christian Church. Thus, such a form of plan as the Great Mosque at Brûsa would be impossible for a church service, only about one-quarter of the congregation being able to see the position where the altar would be placed; but the Mohammedan does not face toward the Mecca niche, but parallel with it and toward Mecca itself. Further, spiritual equality is an essential idea of the creed, and there is no such distinction as between laity and clergy. Hence the floor is one open, level area, and there are no such smaller chambers as chapels and vestries.

Applying these conditions to S. Sophia, it is evident that, although simplification was necessary, yet in its main lines the plan was eminently suited to Mohammedan ritual. It should be remembered that both religions were of Eastern origin, and that many observances applied to them equally. Thus the custom of washing before prayer was practised by the Christian also, and the cloistered forecourt of S. Sophia, with its central fountain, was identical with Mohammedan requirement. On the other hand, the Christian narthex was meaningless to the Mohammedan, for the system of neophytes, who were promoted by degrees to the full entrance of the Church, did not exist in his religion. Internally, the broad, unbroken space under the dome and semidomes precisely fulfilled the conditions of Mohammedan worship, and it was this principle of covering a large area which was the main theme of the subsequent Turkish mosques. The aisles of S. Sophia, necessary to give depth of abutment to the great arches of the dome, were also retained, but their subdivision in height by galleries was discontinued. These galleries had been reserved for the use of women in the Christian Church; but a Mohammedan controversy had decided that women have no souls, and their galleries were accordingly abolished in future mosques. The exedræ, or subsidiary apses, seem to have been regarded as obstructions to that broad floor-space which was the Mohammedan ideal, and the whole tendency of mosque-construction was toward a great square described around four isolated piers which sustained the central dome.

The Mosques.

The mosques were built on a grand scale, and the more powerful Sultans successively vied with each other in erecting a magnificent tribute to Allah and a convincing proof of their own power. Several of the mosques approach S. Sophia in size, but perhaps more astonishing than their size is the sustained, yet concentrated, energy of their building. Within little more than a hundred years some seven great mosques were built in Constantinople which are definitely larger than the innumerable smaller mosques that fill the city, and any one of these alone would make the city notable. It may be said that a series of buildings is here brought together which, under other social conditions, would have been scattered among several centres, that the whole empire contributed to this congregated magnificence. But, however that may be, this series of great mosques is an amazing testimony to the power and greatness of the Turkish Empire which at one time overshadowed Europe.

The Bayezid Mosque.

The first mosque to be built in Constantinople was erected by Mohammed the Conqueror himself; but it was destroyed by an earthquake and rebuilt at a later date, and, so far as I know, no record of its original design remains. The earliest existing great mosque was built by Bayezid II. in 1497-1515. This is one of the smallest of the imperial mosques, the forecourt and mosque forming a double square on plan, which measures 268 ft. by 135 ft. The forecourt has three entrances, and is surrounded by a cloister six bays square, each bay being defined by pointed arches set on columns and covered with a cupola set on pendentives. The mosque itself is set out as an exact square, 120 ft. 9 in. across internally, and the four central piers are so placed as to include two of the four equal bays of the aisles, these bays being covered with cupolas on pendentives. The arcades which subdivide the north and south sides of the central square bear tympanum-walls filling the great arches, these walls rising above the aisles and pierced with windows. The dome is carried on pendentives which close around the great arches, and at the base it is pierced with a ring of windows after the manner of S. Sophia.

But the crux of the whole design was the management of the semidomes. It has already been said that the Mohammedan architect seems to have felt the apses and exedræ of S. Sophia to be obstructive, and he solved the difficulty by making them an affair of vaulting only. On the ground plan of all these mosques there is no sign of the complex domical forms which are so conspicuous externally, and the whole of them are ingeniously carried on arches. In this case the semidomes of the exedræ are altogether omitted, and the great semidome is carried on simple pendentives, so that it is a repetition of half the central dome.

This mosque is of special interest on account of an unusual development at the west end. The western aisle is extended on each side by additional wings, so that an uninterrupted vista, 272 ft. in length, is obtained. Each wing is divided into three bays, and covered with five cupolas, their supporting arches carried on other arches in a most astonishing and characteristically Oriental way. Such an instance is in itself sufficient proof of the perfect familiarity with arched and domical construction, for none but the adept would venture to play with his methods so freely. The bases of the minarets project from the extremities of the wings, and porticoes connect them with the outer wall of the forecourt; while, on the south side, two libraries add yet further length to the wing. I think that these wings, minarets, and libraries were added after the original building of the mosque, and probably themselves not all at the same time.

The external view of the mosque shows the high outer wall of the forecourt, with its rows of window-openings and its entrances, and the repeated cupolas of the bay divisions. This principle of covering by a series of cupolas, and the consequent subdivision of the plan into square compartments, is an essentially Oriental method of roofing, and its influence penetrated all Eastern building. The cupola, or dome, has always been a common mode of construction in the East, applied as readily to the meanest dwelling as to the palace and shrine, and, for the proper appreciation of Oriental architecture, it is necessary for us to forget that special significance of the dome which its rarity in the West has conferred on it.

Beyond the forecourt rises the mosque, its dome, semidomes, and cupolas, all intimately expressing, and almost repeating, the forms of the interior. The four great piers beneath the dome are marked by circular turrets, and the two minarets rise clear from the buildings below, a twin and slender contrast to the broad, curved masses of the mosque. This close intimacy between internal and external form had also been characteristic of Byzantine building, but only insomuch as it is characteristic of all Oriental building. Such simplicity and candour of construction is one of the finest qualities of Eastern art, and, at the same time, distinguishes it from the more complex methods of our Western art.

The Mosque of Selim.

In 1520-26 Suleiman I. built a mosque to the memory of his father, Selim I. The plan is extremely simple, consisting of nothing more than a single great dome, set with pendentives on a square of wall, and with the usual forecourt attached. The building shows little of the influence of S. Sophia, and may be regarded as the largest instance of the smaller type of mosque, having no relation to the main development of the great mosques.

The Shah-Zadeh Mosque.

The next great mosque—that of the Shah-Zadeh—was also built by Suleiman I. in 1543-48, and it exhibits several changes which ultimately became embodied in the traditions of mosque-building. Its architect was an Armenian, named Sinan, and he seems to have gathered together the vague tendencies of his day, stamping them with his personality and setting the standard which henceforward guided the design of Turkish mosques. He may well be compared with such a man as Bramante in Italy or Inigo Jones in England.

The Shah-Zadeh Mosque is of medium size, measuring 145 ft. by 166 ft., while the forecourt measures 133 ft. by 147 ft., giving a total length of 278 ft. The forecourt is surrounded by a cloister of unusually large bays, each being 28 ft. square; and the north and south arcades have deep wall-arches with projecting piers. The mosque itself is set out in the exact form of a square, and there are three principal innovations to be noticed. The first is that the application of semidomes is no longer confined to the east and west sides of the central dome. All the four sides are treated exactly alike in this respect, and the expression of length given by the north and south arcades in the previous mosque, and reminiscent of the Christian Church, is exchanged for a more central and perhaps more logical emphasis of the great dome. Although, as compared with the Bayezid Mosque, the actual floor space is only increased by the omission of two columns, yet the æsthetic restriction of the north and south tympanum-walls was removed, and the whole interior filled with a wonderful sense of expansion. The second point of originality lay in the introduction of subsidiary semidomes in the bases of the great semidomes; and the complete domical scheme of the apses of S. Sophia was thus reproduced, although entirely supported on arches and not indicated in any way on the ground plan. A difficulty arises in fitting the curves of the lesser semidomes within the rectangular lines of the lower plan, and to this was probably due the simpler form of the earlier Bayezid Mosque. This difficulty was solved in the Shah-Zadeh Mosque by splaying back the main piers so as to give room behind the great arches for the full development of the lesser semidomes, and some such device was generally adopted afterwards. The curves of the subsidiary semidomes left only small spandrils on plan to be supported, and these were filled out with courses of corbelling. The third point of fresh development was the extension of buttresses on the north and south sides of the mosque. This was rendered necessary by the increased scale of building and the

greater height of the dome, and, with the Oriental dislike of projection, or in the desire of utilising the whole extent of building, the spaces between the buttresses were filled with arcaded galleries. These were partly used as porticoes, and they became a permanent feature in later mosques and an important factor in the external aspect of the façades.

Externally, the higher development of the plan is reflected by a further complexity of grouping. As in the Bayezid Mosque, each several part of the internal doming may be clearly traced, from the cupolas over the aisles, the great and lesser semidomes, up to the central dome. The circular turrets over the four main piers are here more marked than in the former mosque, and their cupolas are deeply corrugated. An enrichment of carving is applied most effectively to the cresting of the drums and to the shafts of the minarets, and there is a certain refinement and delicacy of form throughout which is sometimes lacking in later work. Viewed from the ground the mosque is of most shapely proportions. The main square of the plan is carried up to a constant cornice-level, and serves as a grand base on which is set the complex pyramidal outline of the domical roofs. The external arcades give deep and restful shadow, and the minarets, set in the middle of the plan, accentuate the grouping and clear it from any confusion.

The Suleiman Mosque.

Sultan Suleiman I., or the Magnificent, seems to have been a truly Augustan patron of the arts, for, in 1550, Sinan, the architect, began the building of his third great mosque, which is called the Suleimaniyeh after him, and which, in point of size and natural position, dominates almost all Constantinople. It is set on the summit of the low hills, which rise from the Golden Horn on the one side and from the Sea of Marmora on the other, and it is a most conspicuous landmark from all parts of the city and from the very sea itself. The mosque is 227 ft. in width and 203 ft. in length, and, with the forecourt, makes up a total length of 359 ft. It is interesting to compare the size of this, the largest of the Turkish mosques, with the Church of S. Sophia, its prototype. The church is 237 ft. wide and 291 ft. long, its total length, including the original forecourt, being about 444 ft. Thus it will be seen that, while appreciably smaller than the church, the mosque is, nevertheless, on a most magnificent scale; and it should be remembered that it is merely one of a series and no unique effort. The diameter of the dome is 85 ft. 4 in., as compared with 101 ft. 8 in. in S. Sophia.

The forecourt is nine bays wide and seven bays deep, and has three entrances in the usual positions, the western entrance being elaborated with chambers on either side. The mosque itself in some degree indicates a reversion to an earlier type, for only the east and west sides of the dome have semidomes applied to them, while the north and south sides are filled with arcades bearing tympanum walls. I can find no reason for this reveraion in the mosque itself, and am inclined to surmise that some reactionary influence may have been brought to bear on the architect, Sinan, similar to that which compelled Wren to build St. Paul's Cathedral on the Gothic plan.

The arrangement of the dome and the east and west semidomes, with their lesser semidomes, is similar to that of the Mosque Shah-Zadeh. The north and south aisles under the dome are divided into three bays, and these are grouped in a novel and somewhat curious manner, the central bay being larger than the other two. This setting-out has the result of putting several of the arches out of centre with the cupolas which they carry, and the effect is not altogether satisfactory. Another result of this arrangement is the pushing forward of the outer walls in the central bay of the mosque, the other parts of the outer wall remaining in the usual position and allow four deep porticoes between the buttresses.

Externally, the grouping is less compact than in the previous mosque. The great arches beneath the dome had always been sustained by internal buttresses passing over the aisles, but here, probably on account of the great scale, the buttresses project above the roofs and add a further complication to the already complex formation of cupolas and domes. They rise in steps up to the octagonal turrets over the main piers, and, while still keeping within the general pyramidal outline, they are rendered the more conspicuous by the absence of the north and south semidomes. A novelty is introduced in the great pent-roof which projects over the external galleries. Its purpose is to shelter the faithful while performing their ablutions at the series of fountains below, and it was generally adopted afterwards. For the first time, also, four minarets were erected, two in their usual position at the junction of the mosque and forecourt, and the other two, of less height, at the western angles of the forecourt.

In some respects the exterior is less successful than that of the Mosque Shah-Zadeh. The proportions are heavier, and the buttresses appear to be a mechanical expedient which has not yet been entirely brought into place with the other parts, while the gigantic scale tends to give an almost uncouth aspect to the complicated grouping of the roofs. But these are defects which appear only at close quarters, and it would almost seem as though they were due to a distortion of perspective produced by the enormous size of the building; at any rate, when viewed more distantly, the mosque crowns the hill in a most stately manner, forming one of the most perfect groups in a city of fine architectural grouping.

The Ahmed Mosque.

The next great mosque was built by Ahmed I. in 1608-14, facing the ancient Hippodrome and close to S. Sophia. In scale it is almost equal to the Suleiman Mosque, measuring 214 ft. by 364 ft.; and the forecourt is the largest in Constantinople, for its width includes the external galleries of the mosque. The mosque itself represents the highest development of Turkish planning, for not only are semidomes applied to all four sides of the central dome, and not only are subsidiary semidomes applied to all of them, but also, in three cases, the number of the lesser semidomes is three instead of the usual two. In previous mosques the third subsidiary semidome was represented merely by a wall-arch, but here the greater internal depth of the buttresses allows its full development; and further, this internal depth of abutment is articulated with piers and arches. Altogether, the mosque is covered with twenty domical forms, besides various barrel-vaults, and the interior is filled with the interest of their curving modulation up to the central dome. The four piers under the dome are gigantic fluted columns, 18 ft. in diameter, and built of marble masonry; but the circular form looks somewhat weak and lacking in rigidity, notwithstanding its enormous size. Another striking feature of the interior is the great number of windows; fifty are shown on the ground plan alone, but, together with those in the upper walls, the cupolas, and domes, there are over three hundred windows in all to light this one vast chamber.

As in all these mosques, the exterior is a faithful translation of the interior, and, as the planning is the most highly developed, so the external roofs attain their greatest elaboration. The same progression from the lesser and great semidomes up to the central dome which is essential to the interior is inversely reproduced in the pyramidal outline of the exterior, mounting to the culmination of the same great dome; while the large octagonal turrets represent the great piers, and the stepped buttresses represent the abutment-arches. As before, the main square of the plan rises above the lower galleries and porticoes, and gives a massive base for the complex group of domes. The exuberant expansion of design permeates the whole building, and not four, but six, minarets rise around the mosque, emphasising and relieving its domed mass by their own slender height. There are few Mohammedan mosques with more than four minarets, and the erection of these six led to a charge against the Sultan of wishing to vie with the Holy Mosque at Mecca.

The Yeni Valideh Mosque.

In 1615 a mosque was commenced by the wife of Ahmed I., and, remaining unfinished, was completed fifty years later for another lady, the mother of Mohammed IV. This mosque, the Yeni Valideh Jami, differs from other mosques in situation, for it is not raised on an eminence apart, but is built on the shore of the Golden Horn, and surrounded by the business of a market-place. Although of comparatively small size, its dimensions are still very respectable. The width of the mosque is 156 ft., while the total length, including the forecourt, is 272 ft. The forecourt is of the normal type, entered by three doorways and surrounded by a cloister covered with cupolas. The mosque has semidomes on all four sides of the main dome, and each of these has two subsidiary semidomes, except at the west, where the design of the Ahmed Mosque is recalled by three subsidiary semidomes. The main piers are of a cruciform plan, and the smaller western piers are octagonal. The external porticoes and galleries and the position of the two minarets follow the arrangement of previous mosques, which had now become a settled tradition.

The same traditional quality which was observed in the planning also moulded the external form. There were here no new problems to be solved; the possibilities of mosque-building had been explored within the limits which the Turks had set themselves, its principles had been finally determined, and the building of a mosque had in a large measure become automatic. The discontent of the artist still found a certain scope in refinements of proportion and expression, but the time of large constructive originality was over; and, for a brief period, Turkish art passed smoothly along the high level it had attained, still moving by the impetus of the past ascent. Thus the walls and domes of the Yeni Valideh Mosque were composed with the perfect familiarity of previous experience, and the later date of its building is indicated by slight changes in the adjustment of the parts and by a care for well-calculated effect, rather than by any distinguishing novelty.

The Mosque of Osman.

By the end of the XVIIth century the Turkish Empire had passed the meridian of its power, and the subtle relation between politics and art was reflected in a decline in energy and taste of building. For more than a hundred years no great mosque was built, and the Mosque of Sultan Osman, erected in 1748-55, shows the first sign of Western influence, a taint of the Rococco Renaissance. The scale of building is smaller than in any of the previous imperial mosques, and the plan is treated with a certain freedom which shows an effort after novelty. The forecourt is of a unique shape, the western bays being set out on a semi-decagonal form. The several bays are covered with the usual cupolas on pendentives, and the interspaces are covered with barrel-vaults. The mosque itself consists of a single great dome set on pendentives, and the most remarkable point of construction is the way in which these are carried. The weight is not taken by the solid walls, as the plan would suggest, but by four great arches which spring from piers at the angles of the mosque, the walls themselves becoming mere filling. At first sight it would appear that the arches are merely decorative, and that the walls take much of the direct weight, after all; but the tympana are so pierced with windows that there is little strength of masonry left. The arches evidently take the weight of the dome, and they depend on the remarkably slight abutment of the angle piers. The dome is of light construction, and the piers are weighted with turrets, but the design is certainly very daring; and the dome, with an internal diameter of 81 ft. 9 in., is no plaything, being the second largest Turkish dome in Constantinople. Although the construction is still distinctively Turkish, the decoration has become an extraordinary Saracenic version of the Rococco Renaissance. Mouldings are freely used, and often with very refined profiles; but the walls of the forecourt and the interior are frittered with pilasters, and the fine simplicity of typical Turkish work has been almost altogether lost.

[*** Owing to the pressure on our columns this week, we are compelled to divide Mr. Reynolds' interesting paper. The remainder of the paper, and some notes of the discussion, will be given in our next issue.]

THE QUANTITY SURVEYORS' ASSOCIATION.

An ordinary general meeting of the Quantity Surveyors' Association was held on the 6th inst., in the Commodore's Room, Holborn Restaurant, W.C., Mr. A. J. Gate, Vice-President, in the chair, when Mr. F. B. Hollis read a paper entitled, "Some Thoughts on the Quantity Surveyor—and his Relation to the Building Owner, the Architect, and the Builder."

After a few preliminary remarks, he said it had occurred to him that the quantity surveyor's relation to the principal parties with whom he was usually brought into contact, in the ordinary exercise of his vocation, might be profitably touched upon as to the restrictive title of "Quantity Surveyor," and its actual definition. He was aware that some surveyors of good repute and practice object to the prefix of "quantity" to that of surveyor, on the ground that the preparation of bills of quantities does not exclusively embrace the whole scope of the work which passed through their hands. He submitted, however, that it was because they were principally, if not altogether, men who deal chiefly with quantities as applied to the building and allied trades, that they were now fairly and legally entitled to the distinctive designation of "quantity" surveyors, in contradistinction to the more general term surveyor, which might, and did, in many cases, cover a multiplicity of branches of the profession in which "quantity surveying" was conspicuous by its absence.

Definition of a "Quantity Surveyor."

He would suggest the following definition of a "Quantity Surveyor":—

"A man having, first, an expert knowledge of building construction in all its varied phases.

Secondly, a knowledge of the mode of measurement of cubical, superficial, lineal, and numerical items of the various trades and artificer's work employed in the erection and completion of buildings, together with the monetary values thereof.

Thirdly, a knowledge of the particular Building Act or Acts, or local by-laws, which may legally govern the various stages which the building will occupy from inception to completion.

Fourthly, such knowledge of the various styles and orders of architecture and its parts as may enable him to truly describe the particular details of work.

Fifthly, an intimate acquaintance with modern sanitary laws and requirements, the law of dilapidations, arbitrations, compensations, light and air, and other easements with respect to public or private buildings, and the value of property for mortgage or other purposes.

Lastly, a comprehensive grasp of the nature of the work to be done, which, with strict accuracy and method in his procedure, may enable him to place before the builder bills of the exact quantities of all materials and labour required to be provided, from which the cost of the particular structure with which he is dealing may be clearly estimated."

In this somewhat lengthy definition he had included accuracy as a desideratum for the quantity surveyor. This was, indeed, a *sine quâ non* of his existence. He was aware that the layman's general reading of the word "quantities" was far different from that which he had attempted to define. He said a layman's idea, but some professional men's view of "quantities" was perilously vague.

Some Bills of Quantities.

He had before him a bill of quantities, not, he was glad to say, prepared by a member of that Association, or by a surveyor in London practice, in which occurred the following items—and these in a job in which the brickwork ran to between 200 and 300 rods. The first item was:—"So many yards superficial, tuck pointing to front, measured gross, including all openings."

The next item was:—"Allow to finish all other internal and external walls struck joint."

From another bill he took the following choice extracts:—

"No. 1. Digging sump hole 15 ft. deep from surface and as large as necessary to enable man to work."

They would see how beautifully the quantity surveyor had made the size of the sump proportionate to the girth of the man digging it; small man, small sump; and *vice versâ*. Again:—

"2091 ft. sup.=72 rods nearly, 14 in. reduced brickwork in lime mortar in walls and foundations.

No. 1 dry brick lining to sample (sic), 15 ft. deep below surface of ground not larger than necessary for working in while making."

He hardly knew what the result would be if a small man dug the hole, and then a large-sized bricklayer was turned on to stein it.

As to the quantity surveyor's relation to the building owner and the architect, as the architect in his relation to the quantity surveyor became practically the mouthpiece of the building owner, perhaps, for the sake of brevity, he might consider these two relationships together, as, whatever the quantity surveyor did in the interests of the architect, was, to all intents and purposes, in the interests also of the building owner.

Should Bills of Quantities Form Part of the Contract?

As a point vitally affecting the building owner, this might be a fitting place for a few words on that much-debated question:—"Should the bill of quantities form part of the contract?" This was a question which, in one phase or another, was constantly confronting them, and which was coming more and more to the front amongst members of the profession, and was one, he thought, which claimed their earnest attention, with a view to having it settled in some way, upon a more common-sense and less haphazard basis than at present obtains. In cases where the bills of quantities were part of the contract, the employer's main grievances, he took it, were these:—That, until the building was complete, and the accounts had been adjusted, some uncertainty—varying, of course, with the magnitude, etc., of the structure—existed as to the exact amount he was spending upon it. This was, of course, from the point of view of the business man, not only a novel, but an eminently unpleasant, situation. He could order a yacht or a motor-car, and know exactly the amount of the cheque he would have to draw in exchange for either. But, should he decide upon building a house, he must be satisfied with a more or less approximate estimate, which could only be replaced by an exact figure upon the completion of the building. And, in cases where a limited sum only was available for this purpose, it might conceivably be the case that great inconvenience might arise when, upon an adjustment occasioned by a "shortage" in the original bill of quantities, an extra sum of money was called for to meet such a contingency. When the quantities formed part of the contract, the employer paid a fair price for what he obtained, and would receive a credit for any items which might have been taken "full" in the original quantities. So that, upon the whole, there did not appear to be any justifiable cause of complaint upon his side. Of course, the usual business risks he must take in any case, such as the builder's failure before the completion of the contract, with its very serious inconveniences; then workmen's strikes were always an unknown quantity, and might arise at any moment—so to speak—causing delay in the carrying out of the works, and frequently (as in the case of a large factory) very substantial monetary losses and inconvenience.

Until quite recently the opinion was held by many, besides himself, that it was the builder who benefited by the system, as he would be free from any risks of loss in consequence of the lack of skill in, or by any negligence on the part of, the quantity surveyor; inasmuch as any errors which appeared in, and any omission from, the bill of quantities would be rectified. In view of a judgment in the recent case of Patman & Fotheringham *v.* Pilditch, in which it was held that an omission from a bill of quantities was not an error, and was not capable of being rectified under clause 12a of the R.I.B.A. Conditions of Contract, they would probably agree that a case might frequently arise in which a builder would hesitate, if not positively refuse, to sign a contract of which a very indifferently prepared set of quantities formed a part.

The correction of casual errors was one thing; but, occasionally, it might be necessary for a builder or his representative to endeavour to convert a bad set of quantities into a good one, and to measure many items of labour which an inefficient surveyor, for instance, would neglect to measure. His own opinion was that making the quantities part of the contract would ensure a more thorough consideration of doubtful points in the specication and plans, and lead to the weeding out of any doubtful point in either—a consummation devoutly to be wished.

Writing of Specifications.

Another point of interest to the profession was the writing of specifications. An architect, who should see in his mind's eye his ideas complete, with all its variety of material, form, and colour, not only in the shell of his creation, but in the finishing thereof, was, of course, the proper person to describe what he wanted. Many architects, however, could not give the time to go so far into this branch of their profession, and were content with jotting down notes of the principal points they desired embodied in the specification, leaving the elaboration to the quantity surveyor. When one was in the habit of constantly working for an architect, his various mannerisms and wishes soon became familiar to the surveyor, who could then draw the specification without much danger of many, at least serious, errors of omission or commission. Some architects, on the other hand, favoured them with a too full specification, in which one paragraph nullified another, and perhaps both were at variance with the drawings. Of the two evils, most of them would prefer the former.

Conditions of Contract.

Perhaps reference might also here be made to the conditions of contract. It was not even now unusual to find a form issued containing a long series of clauses, traditionary in their arrangement and spirit, which probably had been learnt by heart by the pupil, and subsequently adopted by him, when he became a principal, without any very thorough analysis of their meaning, and which were made to do duty indiscriminately to all works as they came to hand, under any and all circumstances. In a form such as he had alluded to, the clauses were, in many cases simply repetitions, and repeated themselves with nauseating monotony. A clear form of contract greatly facilitated the settlement of the account, more especially in its relation to the question of penalties.

The Architect and the Surveyor.

As by virtue of the architect's authority the quantity surveyor was most often directly employed by him, it resolved itself into the ordinary business instinct, that, so far as possible, he, the quantity surveyor, should save the architect as much trouble as he possibly could. And it might thus frequently happen that in his "taking off" many items, perhaps not indicated in the specification, and often but vaguely by the plans, would present themselves. It was here that the practical knowledge of the quantity surveyor would have scope. A list can be prepared of what might have been taken under such circumstances, and at the conclusion of the "taking off," perhaps one interview between the architect and the quantity surveyor, provided with such a list of notes and queries, would be sufficient to clear all doubts, and then, so far as the dimensions went, all would be plain sailing.

There were subsidiary, but important, matters, too, in which the surveyor's advice and training might be of service, and should, of course, be tendered to the architect. He referred to the complex legal questions which might, and did, crop up. Again, in erecting a new building or buildings upon a site already covered with old structures, the question arose as to the best way of preparing the site for the new works. This, if a work of any magnitude, would resolve itself into one of two alternatives, viz., (1) If the whole of the old materials were cleared away; (2) if a portion of the old materials might be used in the new works. In the first case the works, in pulling down, might be measured floor by floor, beginning with walls, then floors, roof, then the finishings, doors, windows, etc. This, carefully done, with an inner column showing the credits for the several items, was, in his opinion, the fairest system in which this part of the work could be arranged. In the second case, a bill, such as he had indicated, would still give the work to be done in pulling down and clearing away, whilst the credit value would appear in the reduced rate for the concrete, brickwork, etc., in which the old materials might be re-used. Of course, there were other ways in which these pulling-down works might be treated, such as tenders from house-breakers, or by daywork upon a schedule. This latter course did not, however, commend itself to him, more especially as the house-breaker's trade was carried on in a large way by solvent and responsible firms.

The Quantity Surveyor and the Builder.

As to the relation of the quantity surveyor to the builder, it was a simple truism to say that the modern builder was well able to look after himself. With his modern system of checking the quantities with his returns, whether from merchant, yard, shop, or foreman on job, any "shortage" stood a poor chance of not seeing the light.

Another, and not infrequent, cause of difference between the builder and the quantity surveyor was the insufficiency of the description of some of the items appearing in the quantities. As they were aware, owing to various causes, the drawings were frequently not placed in their hands until about the time when it was expected that tenders would be invited, or, at all events, somewhat near that period. The consequence was an inevitable rush at high pressure to expedite the preparation of the bills, which were then, in some cases, prepared from very incomplete details and rough notes only as a basis for the specification. Thus, under the circumstances, some conflict between the builder and the surveyor might not unnaturally be expected to arise, but with tact, and doubtless the exercise of the "give and take" spirit, matters, unless of a very grave nature, could generally be amicably adjusted.

Pricing of Items not in Quantities.

Another matter which might be referred to was the pricing of items which did not particularly appear in the quantities by reason, perhaps, of a section of, say, a cornice or architrave, as drawn and taken, being substituted by perhaps a larger one for some all-sufficient reason of the architect. Recently I had a case in which the architect altered the whole of his small architraves by using a 3-in. by 2-in. section instead of the 3 in. by 1 in. as shown by the original details, and, of course, as taken in the quantities. There was a considerable quantity of this particular item, both straight and circular, in deal and pitch-pine. In the hurry of the job, no price was agreed with the builder for this extra, and in his account he claimed just double the contract price of the original section for the larger one, contending that, as the superfices of the section was twice that of the one he had priced, he was entitled to the same proportion of rate for the larger size. This, of course, from that gentleman's point of view, was strictly correct, and, financially, most satisfactory. The builder, however, eventually saw that, although the section of the material was doubled, such was not the case with the labour involved in preparing and fixing it, and terms were agreed upon a somewhat more reasonable basis.

Measuring Works in Progress.

Another, and, in some cases, most onerous duty of the quantity surveyor was the measuring of works in progress, for the amount of the certificate. Too much care could not be taken in this, more especially if there should have been any serious alterations in either the details or the materials used in construction, both of which contingencies might have arisen from circumstances familiar to them all. In buildings which were being carried out in different portions as they might be required, the labour involved in measuring for certificates might easily be very great, and much responsibility rested upon the surveyor in arriving —and that with more or less rapidity—upon the amount that could justly be certified for, which generally fell short of that expected and asked for by the builder.

The Association, and Accuracy of Bills of Quantities.

Mr. Hollis then alluded to a clause in their Articles of Association to which he drew the attention of all connected with the building trade, i.e., clause 13, which explicitly stated, "That any member of the Association who shall supply bills of quantities holds himself responsible for their accuracy, and to pay for all losses caused by his errors therein. . . ." With all sincerity he said that, in his experience, he know of no other body of professional men having had the honesty and courage to voluntarily bind themselves to recoup any losses arising from their mistakes, and this clause alone was one which made the Quantity Surveyors' Association deserving of the best support of all those who desired equity in their business dealings. As hon. secretary of the Association, it had come to his knowledge that certain London members of the profession had withheld application for membership by reason of the existence of the above clause. What good reason could there be for their hesitancy? Many of these same gentlemen, when taking up an appointment as quantity surveyor to the London County Council, or other corporate body which insisted on the financial responsibility of those they employ, did not hesitate for one moment to commit themselves by written contract to such a guarantee as clause 13 implied. Surely no gentleman of the profession, having been guilty of an error in the preparation of his bills, but would elect to be judged by a tribunal of his expert brethren, rather than at the hands of a jury of laymen.

The Builder, etc.

He assumed that at the beginning of the job, when the trenches, concrete, and footings exceeded in depth and width—owing to some unforeseen circumstances—the measurements shown on the plans, that their measurements of the actual work were checked and initialed in their dimension book by the builder's authorised representative. If the extras and omissions should be fairly large in proportion to the size of the job, there would doubtless be a surveyor on the builder's behalf to meet them, a course of which he much approved for the reason that there was less likelihood of the necessity for worrying the architect, and that the builder, whatever the result to him, would perhaps be the more satisfied. However, whether a surveyor appeared for the builder or not, he again pleaded for scrupulous accuracy in figures and in description. The clearer the latter the more easily would the pricing be done. There would, of necessity, be many items dissimilar to those in the priced original bills, but a keen surveyor, with a desire for absolute fairness, would not have much difficulty in approximating a price, which, when once fixed after due deliberation, should not be lightly altered. The final adjustment of the account was a comparatively simple matter, and if the surveyor throughout this trying time had to himself been true, and brought to his work industry and integrity, then, whatever the result, whether a grumble from the building owner, the architect, or the builder, he, at least, should feel satisfied with his work, and know that his fees had been well deserved and hardly earned.

He did not purpose going into the question of the desirability of having quantities taken out for any proposed works. He thought that question had long been settled in the affirmative by those in a position to know best, and now our leading architects were the first to insist upon the practice in justice to their clients.

The builders, of course, had, as business men, always looked upon a good bill of quantities as a safeguard and a protection, and it was now for only very insignificant matters that a firm of standing would give an estimate in competition where the quantities had to be taken off by themselves.

Preparation of Quantities Outside London.

As to the difficulties of a quantity surveyor when called upon either to prepare or adjust a bill when the work lies outside the domain of London practice, as they were well aware, the differences in the mode of admeasurement of many items of work in the north, and London, and the south generally were varied and curious. And this divergence was not confined to one or two trades only, but extends to most of them. Uniformity in measurement was, he believed, making some progress throughout the profession, but a great deal remained to be done before even the London quantity surveyors agreed as to the best manner to place before the builder that standing dish of dispute—the bills of labour and materials of Bath, Portland, and other stonework. Generally their own practice and experience would tell them the system which would enable the estimator to best grasp the amount of labour involved in producing certain results; and with that, until some more hard-and-fast lines were laid down by some or the other authority, they must be content, always adhering to that fundamental principle that accuracy in all matters would earn its own reward, and that this aim, carried to the legitimate end, would produce a bill of quantities, the primary object of which was to facilitate and expedite the calculation of the probable cost of the building, for, as their motto had it, "For which of you intending to build . . . sitteth not down first and counteth the cost."

The Chairman, A. J. Gate, F.S.I., in inviting discussion, said that the Association numbers 150 members; in response to advertisement the hon. secretary had received eighty-three applications for the Syllabus, and already eighteen gentlemen have expressed their intention of sitting for the forthcoming examinations. Arrangements have been made to hold simultaneous examinations in South Africa, where there are members and numerous applications to sit for the examinations. A sub-committee on Professional Practice has been formed, and the hon. secretary will be glad to hear from any member who desires the advice or opinion of the Committee on any points arising in their practice. As a proof that the Association was exercising an influence for good, the hon. secretary had lately been advised that the Northern Quantity Surveyors were meeting in conference an Architectural Association in that locality to formulate a uniform scale of fees which should be mutually satisfactory.

On the motion of Mr. A. G. Cross, seconded by Mr. W. W. Barber, a hearty vote of thanks was accorded to Mr. Hollis for his paper, and a brief discussion ensued, in which Messrs. C. J. Mann, T. W. Biggs, C. R. Mitchell, G. A. Ovitts, and H. B. Sanders took part. Several speakers referred to clause 13, and pointed out that there was no guarantee to the building owner or the employer that the surveyor would pay for any errors he was responsible for in his quantities. The surveyor might be a man of straw and without bond-holders, for instance, or some security, the employer was not benefited by the clause. A young surveyor might have the misfortune to make a serious error, or his clerk might make a mistake which passed notice, and what guarantee was there that that surveyor could pay 1,000*l.* or so? The Chairman stated that the penalty, so far as the Association was concerned, was that a member would be expelled if he failed to comply with the rule. A member replied that to expel a member for a mistake seemed rather hard, and he thought that the penalty for a mistake should be governed by the extent of the fees received, and if there were mistakes on the other side they should be set off against the surveyor's mistakes.

Mr. Mann said he was not in favour of going beyond the law in the matter of errors in quantities, and those who were taking up the other position were making a special contract to do something which the law did not wish them to do. However, surveyors did not wish to repudiate their responsibilities for errors.

Another point touched on was the small percentage at which some surveyors did work—at unfair prices, and with results which were often seen in the bad work done.

Mr. A. G. Cross remarked that he considered making the bills of quantities part of the contract was an evil system, inasmuch as it tended to lower the status of the quantity surveyor. There should be a proper scale of fees applicable to the different classes of work with which they had to deal, and the Association was giving this question their attention.

A member observed that the sooner the quantities were ordered and paid for direct by the employer the better, as it would prevent the work of one architect getting into the hands of a firm of quantity surveyors who might, in time of pressure, "farm" it out and become sweaters of the worst type.

Mr. C. R. Mitchell said that in America the system of obtaining substantial bonds from the builders for the due performance of their obligations was general, and remarked that the difference between "error" and "negligence" in a bad bill of quantities was very shadowy.

On the motion of Mr. H. England, seconded by Mr. H. W. Crickmay, the discussion was adjourned, and a vote of thanks to the Chairman, proposed by Mr. Wall Lawrance, brought the proceedings to a close.

CAMBERWELL SCHOOL OF ARTS AND CRAFTS.

THE annual exhibition of students' work at the Camberwell School of Arts and Crafts, Peckham, was opened on Tuesday last, and will continue open till the 18th inst.

The Exhibition consists of a great deal of very ordinary work, showing much painstaking effort, and, as such, worthy of commendation, but in many cases scarcely of sufficient interest to justify public exhibition. Here and there work of a higher order attracts our attention, and, doubtless, a little art is better than no art at all.

A few architectural designs are exhibited. That for a country house is creditably planned and well drawn, though the circular iron pillars shown as mullions to some of the windows would hardly have a good effect in reality. The other designs, and also the sheets of masonry and building construction work, are disfigured by poor printing. The art of lettering is taught to a number of students of the school; it seems a pity that it cannot be extended to include other classes, including those for architectural students.

The woodcuts shown are interesting, and a few of them clever, notably those by Messrs. Wakefield and Waters. The costume studies in pencil and chalks show good work. T. Purvis, jun., has a promising sketch of a typical landlord of the old school. The execution of the silversmiths' work is good, although some of the ornaments tend towards the barbaric, and the shapes of the candlesticks and goblets exhibited can hardly be described as graceful, though quite in accordance with the present style of such art-work. The black-and-white work is interesting, though few of the drawings are free from that amateurish touch which almost necessarily stamps the work of the young student. Some initial letters, by Mr. D. F. Wood, and a German song-book cover, by Mr. I. W. Campbell, show clever handling. The set of designs for a pack of playing-cards, by Mr. V. B. Kell, is one of the best things in the show, and the same student exhibits a good design for stained glass. The executed specimens of stained glass are well above the average. A number of works in embroidery, lithography, figure-modelling, etc., are also on view.

THE TRIBUNAL OF APPEAL UNDER THE LONDON BUILDING ACT:

GOVERNORS OF GREY COAT HOSPITAL, WESTMINSTER, *v.* THE DISTRICT SURVEYOR OF WESTMINSTER.

On Tuesday the Tribunal of Appeal, consisting of Messrs. J. W. Penfold, A. E. Gruning, and A. A. Hudson, sat at the Surveyors' Institution, Gt. George-street, to hear an appeal made by Mr. J. Osborne Smith on behalf of the Governors of the Grey Coat Hospital, Westminster, under sect. 78 of the Act against the following requirement of Mr. E. Drury, District Surveyor, by his letter to Messrs. W. Johnson & Co., Ltd., on November 10, in regard to certain proposed additions to the Grey Coat Hospital, viz., separate means of exit of the width provided in sect. 80 (*b* and *c*) communicating directly with the street or open space must be provided from each floor or level, and that all doors and barriers must be made to open outwards, and no outside locks or bolts must be affixed thereto. Mr. Trollope (Trollope & Winkworth) appeared for the Grey Coat Hospital, and Mr. Godfrey, of the Solicitors' Department of the London County Council, represented the District Surveyor.

Mr. Godfrey drew attention at the outset to the notice to the County Council, which stated that an appeal would be made under sect. 78 against the requirements of the District Surveyor under sect. 80. He wished it made clear under which section they were proceeding.

The Chairman said they had better first hear the facts of the case.

Mr. Trollope said the Governors of the Grey Coat Hospital had entered into a contract for the building of a new wing at the east end of the school building in Rochester-row. The school buildings were surrounded with a high wall, and were quite distinct from the street. The plans of the proposed building had been approved by Mr. Felix Clay, the Advising Architect to the Board of Education, but the District Surveyor had now raised difficulties with regard to staircases, but the Governors asked the Tribunal to allow them to proceed. It was a very old school, and the wing on the west side had been built before the Building Act was passed. He objected to the District Surveyor's requirements on the ground that clause 80 only applied to public buildings, but in the case of this school it was not a public building, and the public had no right to come into the place.

Mr. Hudson said that, as he understood it, the notice was given under sect 80.

Mr. Godfrey said the notice was given under sect. 78, and then it went on to say that the appeal was against the order of the District Surveyor under sect. 80. The fact was that the reference in the surveyor's notice to sect. 80 was merely gratuitous, and was only for the appellants' information as to the sort of building required. He did not state that the building came under sect. 80.

Mr. Osborne Smith gave evidence, and said that what they appealed against was as to the reasonableness or otherwise of putting a second staircase into a secondary day school for girls, which consisted of small classrooms to a great extent. Was it reasonable to make them put a second staircase from the second floor leading to the playground? He interpreted the District Surveyor's requisition to mean a stair on the second floor to discharge into the playground, which was to be an entirely separare staircase not communicating with any other parts of the building. This was a three-story building, and he took it there was to be another staircase from the first floor also discharging into the playground.

Mr. Godfrey said that what the District Surveyor wanted was a separate staircase from the second floor. The staircase already provided was sufficient for the first floor if it communicated directly with the open space.

Mr. Smith said he had provided a concrete staircase 4 ft. 6 in. wide from the second floor, and he contended that this was sufficient for 135 children. What the District Surveyor wanted were two staircases which should have no communication between them. The school was only used during the day from 9.30 to 4 o'clock. The science room on the top floor was of fire-proof construction with a concrete floor, and the staircase from first and second floor passages were also of concrete. The other floors were of wood and plaster ceilings. There would be little artificial lighting. If the District Surveyor's requirement was carried out there would be no intercommunication inside the building, and a person to get to the second floor would have to come out of the building and go up another staircase.

Mr. Godfrey said there would be no objection to the internal staircase going to the top if it was made smoke proof on the top of the first floor. All that was wanted was a further means of escape in case of fire.

The Tribunal examined the plans with Mr. Smith and Mr. Drury, and pointed out where it would be possible to place an external staircase from the second floor; and the parties agreed to confer together with a view to deciding on details. The parties also came to an agreement with reference to the doors.

WESTMINSTER CITY COUNCIL.

THE usual fortnightly meeting of this Council was held on Thursday last week at the City Hall, Charing Cross-road, S.W.

Caxton Hall—Repairing of Stonework.—The General Purposes Committee reported having received from the City Engineer a report that some part of the coping outside this Hall had fallen away. The committee had instructed the engineer to examine and report upon the condition of the whole of the stonework, and to obtain tenders for any extensive repairs which might be necessary. The Committee submitted certain tenders, which will be found in another column, and the Council agreed to accept the lower of the two estimates.

Disinfecting Station.—On the recommendation of the same committee the Council agreed to pull down certain of the houses in Arneway-street for the purpose of erecting a disinfecting station on the site.

Wardour-street Improvement.—The Improvements Committee recommended, and it was agreed, that the Council should lay down an improvement line for the widening of Wardour-street on the west side to a minimum width of 50 ft. throughout its entire length, with a view to the widening being carried out as individual premises are pulled down, and that the London County Council should be asked to contribute to the various sections of the improvement.

Site for New Library.—In view of the fact that the lease of the Trevor-square Library expires in 1912, the Public Libraries Committee were requested to take the necessary steps towards securing a site for a new library in the Knightsbridge District.

BUILDERS' BENEVOLENT INSTITUTION.—We have been asked to state that at the recent dinner of this Institution Mr. H. H. Bartlett (Perry & Co.) contributed 30*l.*, and Mr. James F. Parker (Patman & Fotheringham) collected 120*l.* on his steward's list.

Fifty Years Ago.

FROM THE *Builder* OF DECEMBER 8, 1855.

REGENT-STREET.

NASH, poor man, confiding on a greater amount of Communist tendency than is ever likely to animate the breasts of any four or five neighbours, grouped many a set of four or five houses, so as to make believe that they were each of them denizens of so many Egyptian, Greek, Roman, or Italian palaces. It is no use now, so far as Regent-street is concerned, discussing whether such make-believe combinations were wise or not; they exist, and must for the present be accepted as "*faits accomplis*." Let us suppose Brown, Jones, and Robinson, to whom we may add Smith and Green, to be in occupation each one of a fifth of one of these Palazzi or Propylons, as the case may be, and then let us trace what becomes of what no doubt Nash described to George IV. as a capital idea for obtaining a "grand unity of effect." Brown, No. 1, is a model tradesman, who puts scarcely anything in the windows, who accepts his tenement *in toto*, and whose pride it is to maintain it in exactly the same stone-coloured condition in which he received it from the "party" of whom he took the business some twenty years ago. Jones, No. 2, is of quite a different stamp: he only took his present house in the fancy trade some two years since. The little windows of the propylon would not do for his goods, not they; so the first step is to put in a new front, chosen regardless of expense, with plenty of gilding, plate, and looking-glass, and abundance of Louis Quinze scroll-work, with a blazing inscription, recording the name of Jones and the articles he deals in, such as may be read nearly from one end of the street to the other.

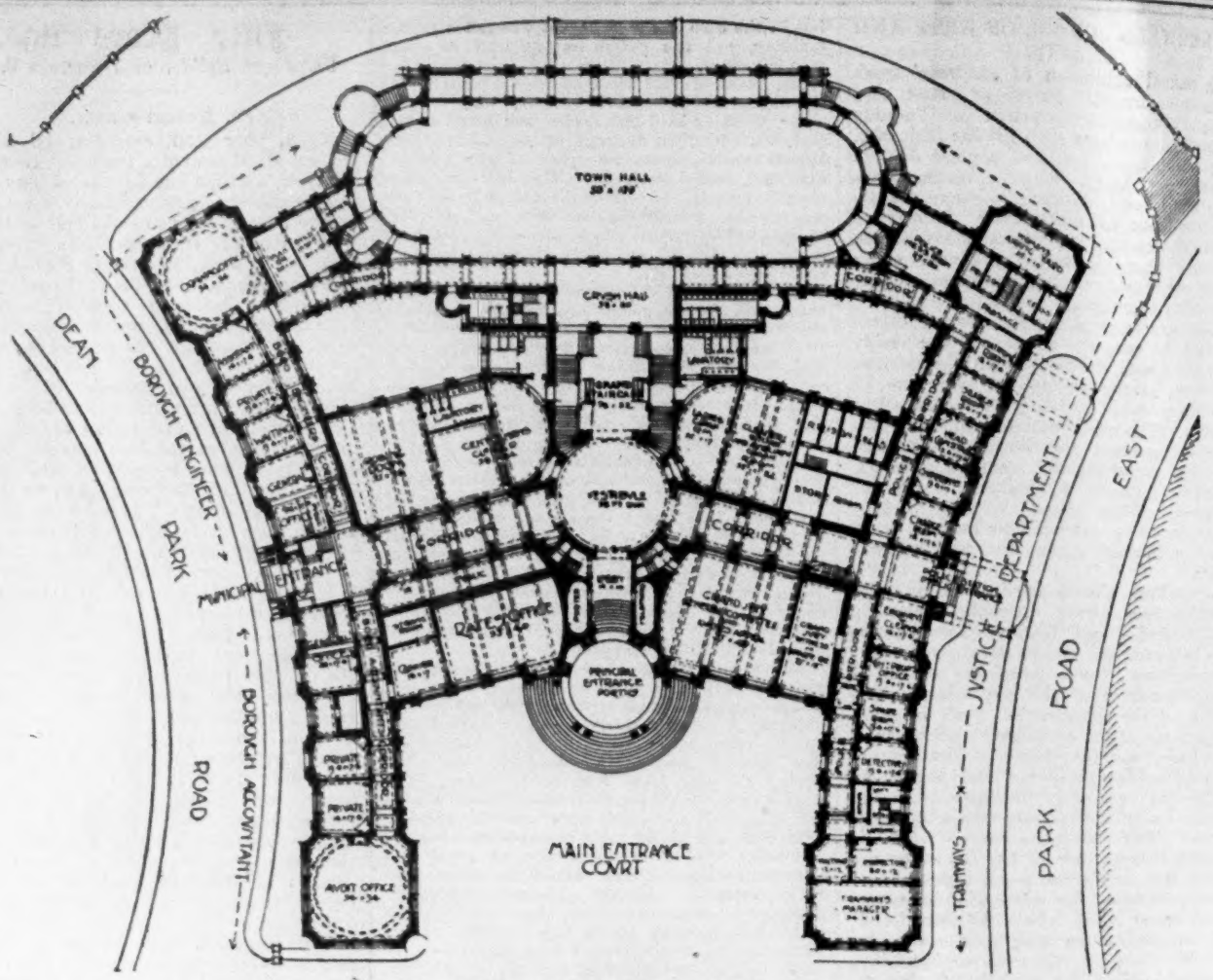
Robinson, No. 3, is known in the street as a business man; he despises what he calls Jones's flash; his new front is all substantial and serious—no putty and gilding, but all solid brass and mahogany, with the heaviest Roman mouldings. Poor Smith held No. 4 for a few months only. After the first few weeks he commenced those "alarming sacrifices" which filled his shop with customers for a month or two, and after a month or two with creditors. His affairs go into the lawyers' hands; his shutters are shut; and his landlord's affairs having become deranged, owing to his having advanced Smith money, so they have remained for the last two or three years—dirt, dinginess, and "melancholy having marked" No. 4 "for their own." No. 5 is Green's "well-known Emporium of Commerce." As a corner house, it stands conspicuous in the street, and bristles with activity. Green's own establishment is a little bit of the Boulevards suddenly dropped amongst us. Has not the clever Celestine Dentelle made the most of the first floor, with her "modes" and "bric-a-brac," her neat little muslin blinds, and conspicuous bonnets? Are not the rooms above, the celebrated "billiards," to which London and foreign flats and sharps resort to waste their money in mysterious communications on the subjects of "le sport" et "les sweepstakes"? Thus, while our friends Brown, Jones, Robinson, Smith, and Green struggle with the world, what becomes of poor Mr. Nash's palace or propylon? and by multiplication of ditto-dittoes, what becomes of the aspect of Regent-street and our unfortunate street architecture altogether?

Illustrations.

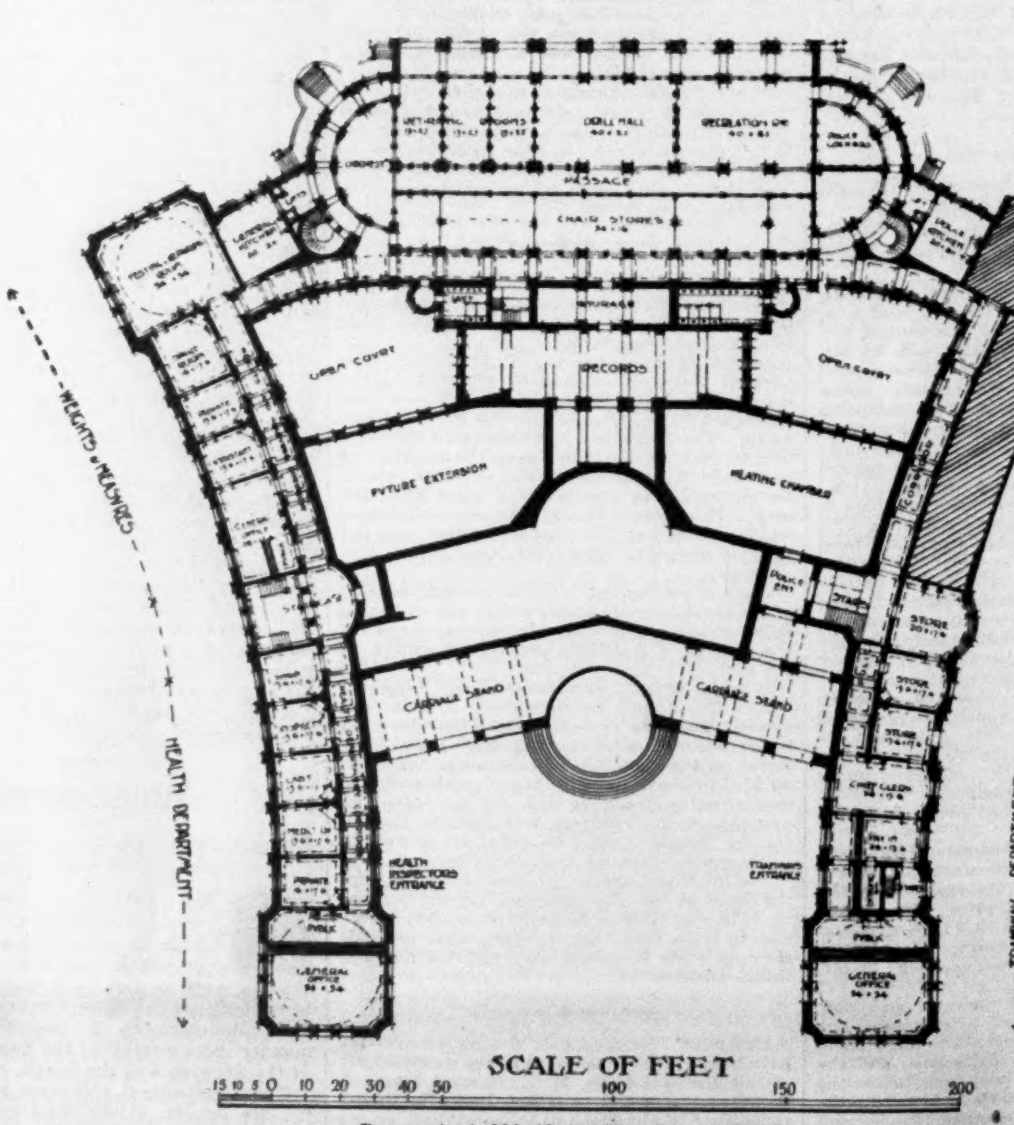
DESIGN FOR PROPOSED MUNICIPAL OFFICES, BOURNEMOUTH.

A PAMPHLET containing a small-sized illustration of this design, with a description of what is proposed, was sent round to the Press a week or two back, but we preferred to wait till we could get the original drawing from Bournemouth to reproduce it in a manner more worthy of the fine quality both of the drawing and the design.

The architectural treatment and the drawing are by Mr. C. E. Mallows; the plan is made in collaboration with Mr Lacey, the

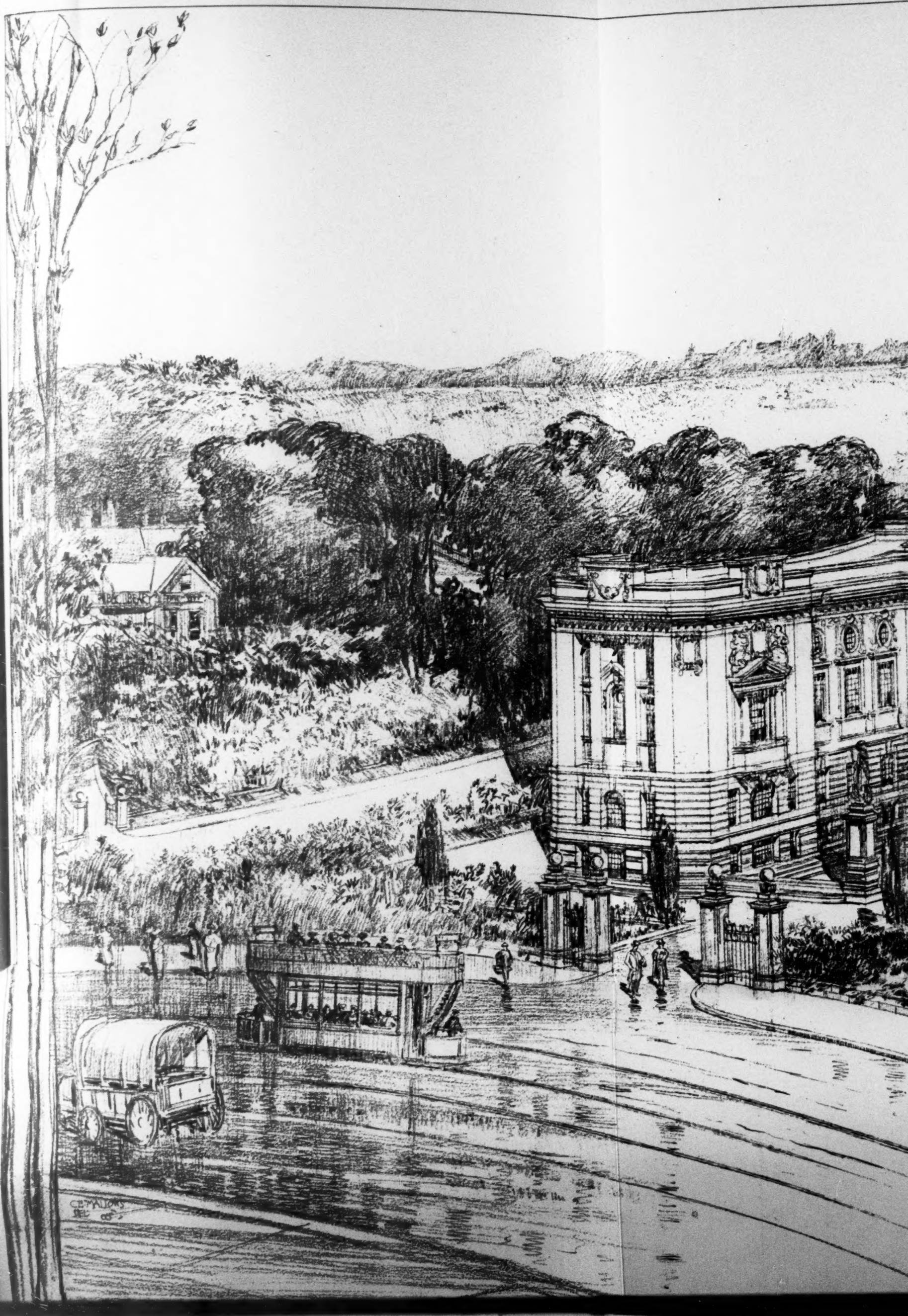


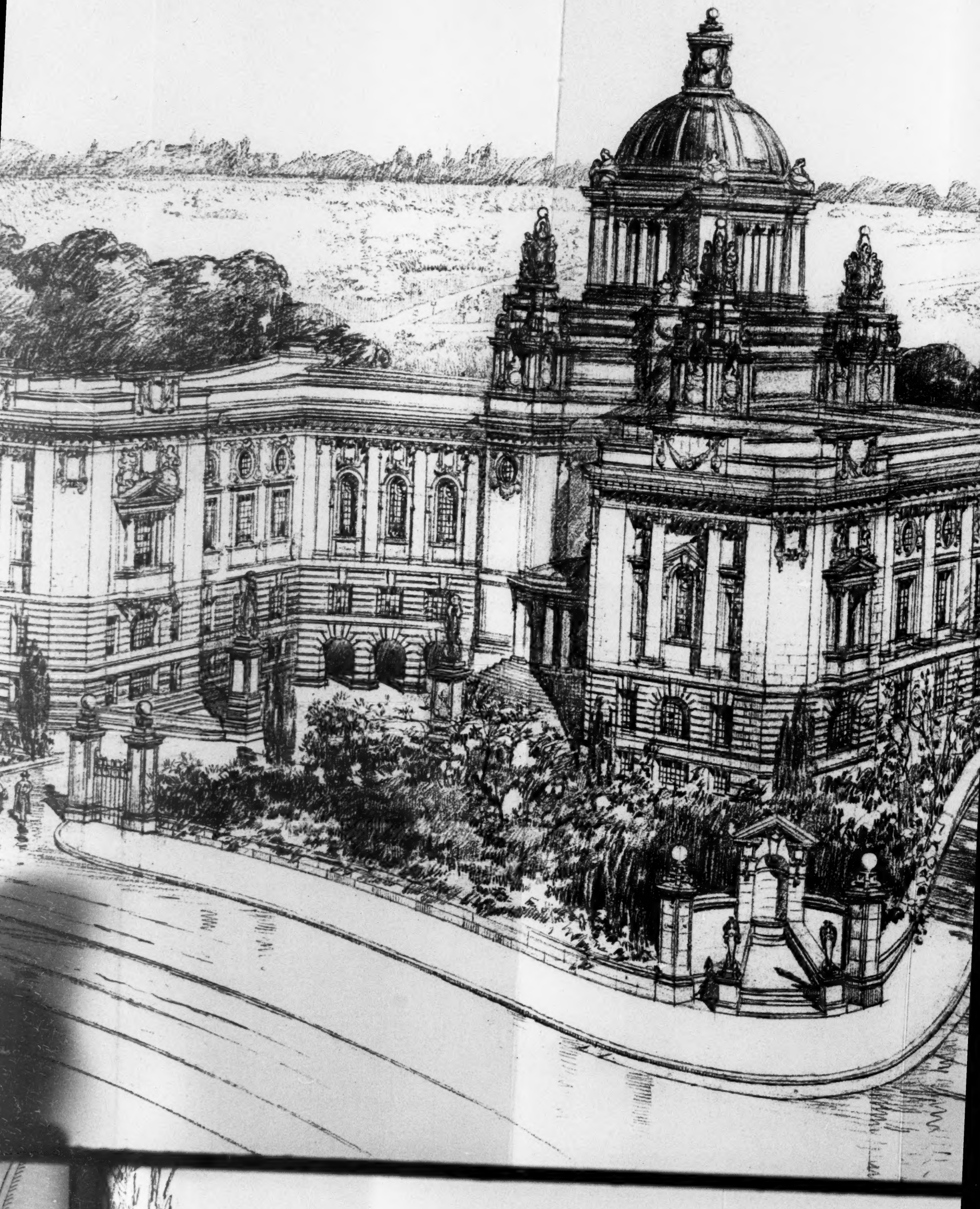
Lower Ground Floor (Level with Dean Park-road West).



Basement at Old Christ Church-road Level.

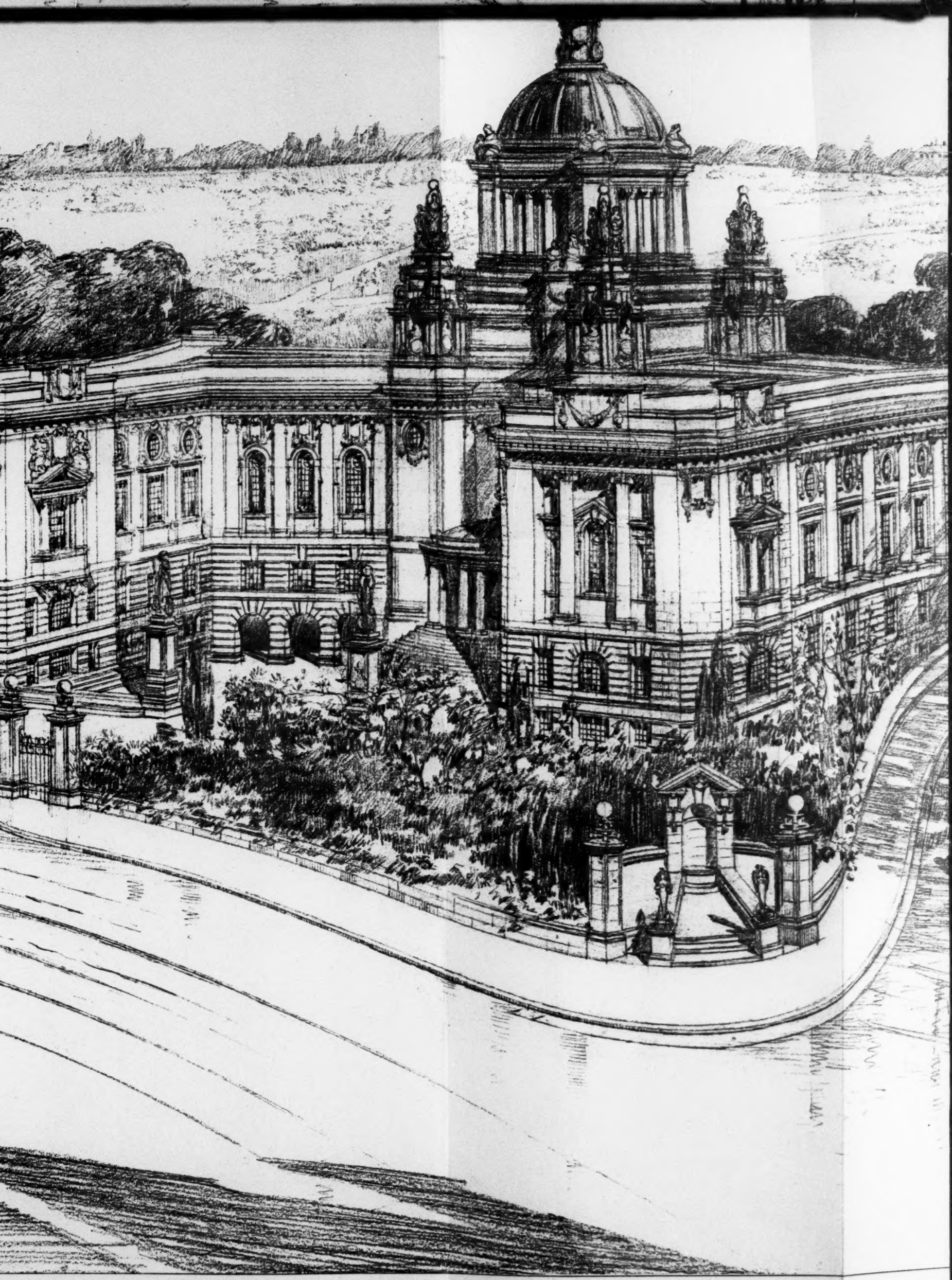
PHOTO LITHO. SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.





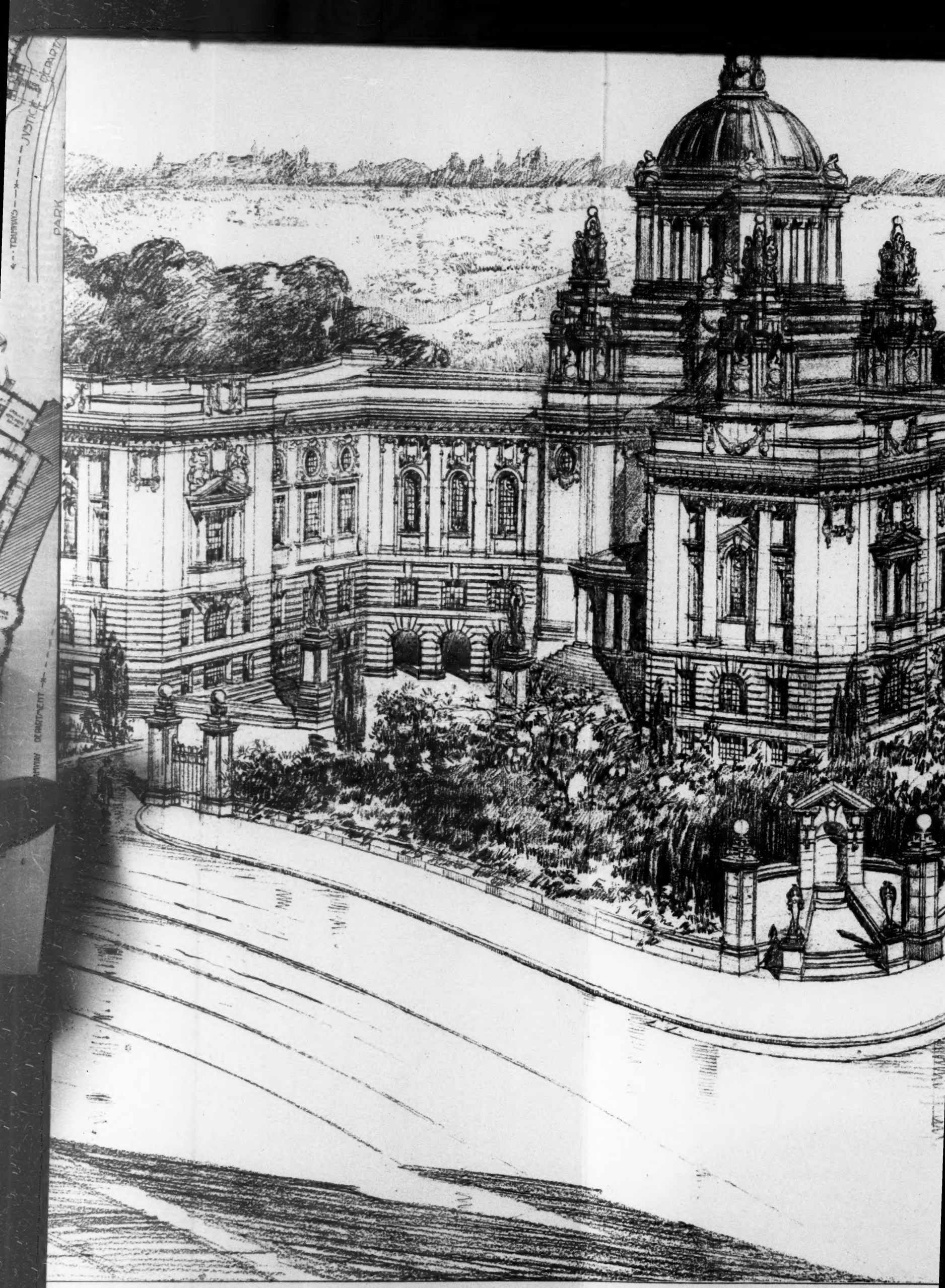
DESIGN FOR

By Mr. C.



DESIGN FOR PROPOSED MUNICIPAL BUILDINGS, LAW COURTS, AND TOWN HALL FOR BOURNEMOUTH.

By Mr. C. E. Mallows, F.R.I.B.A., Architect (in conjunction with Mr. F. W. Lacey, M.Inst.C.E., Borough Engineer).



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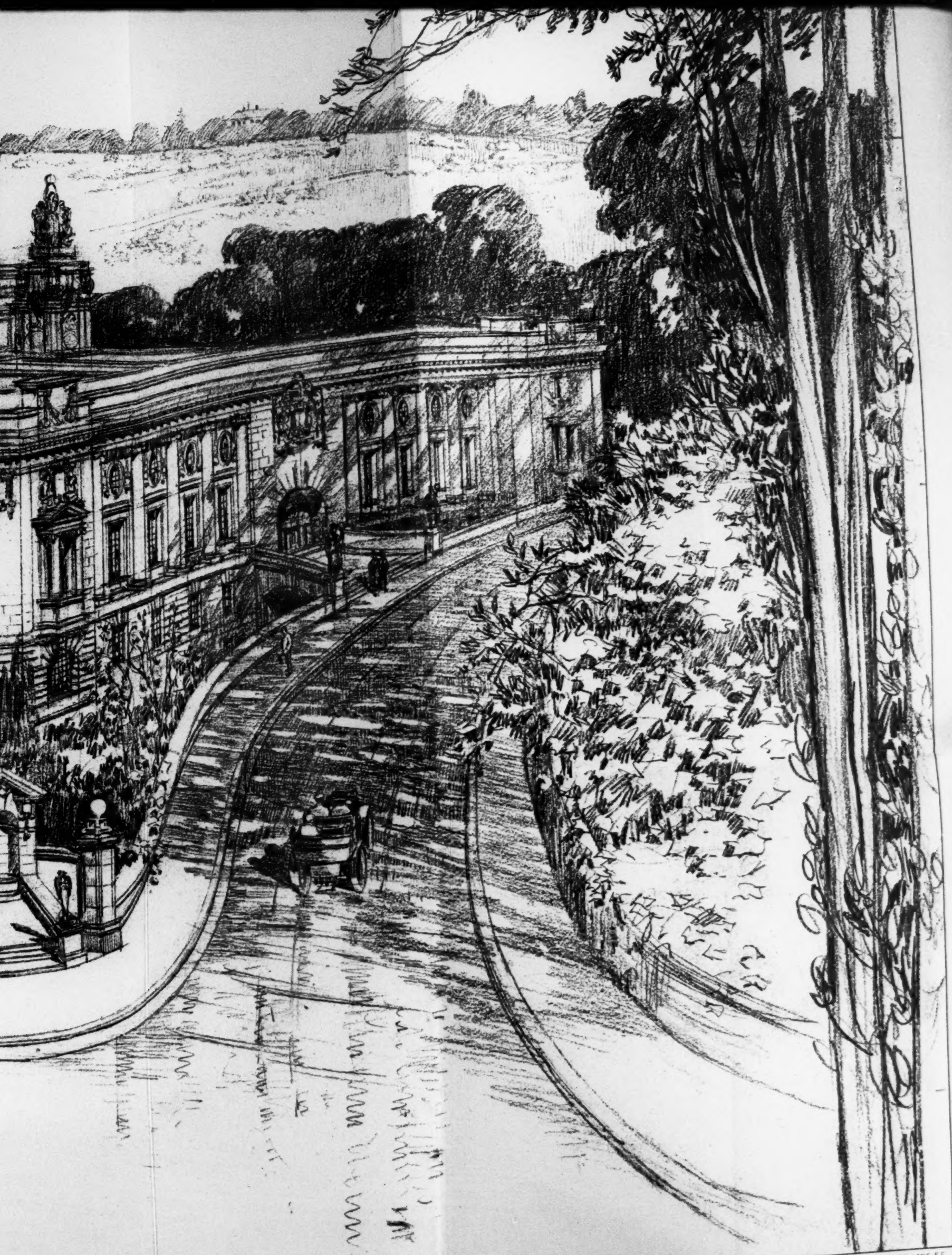


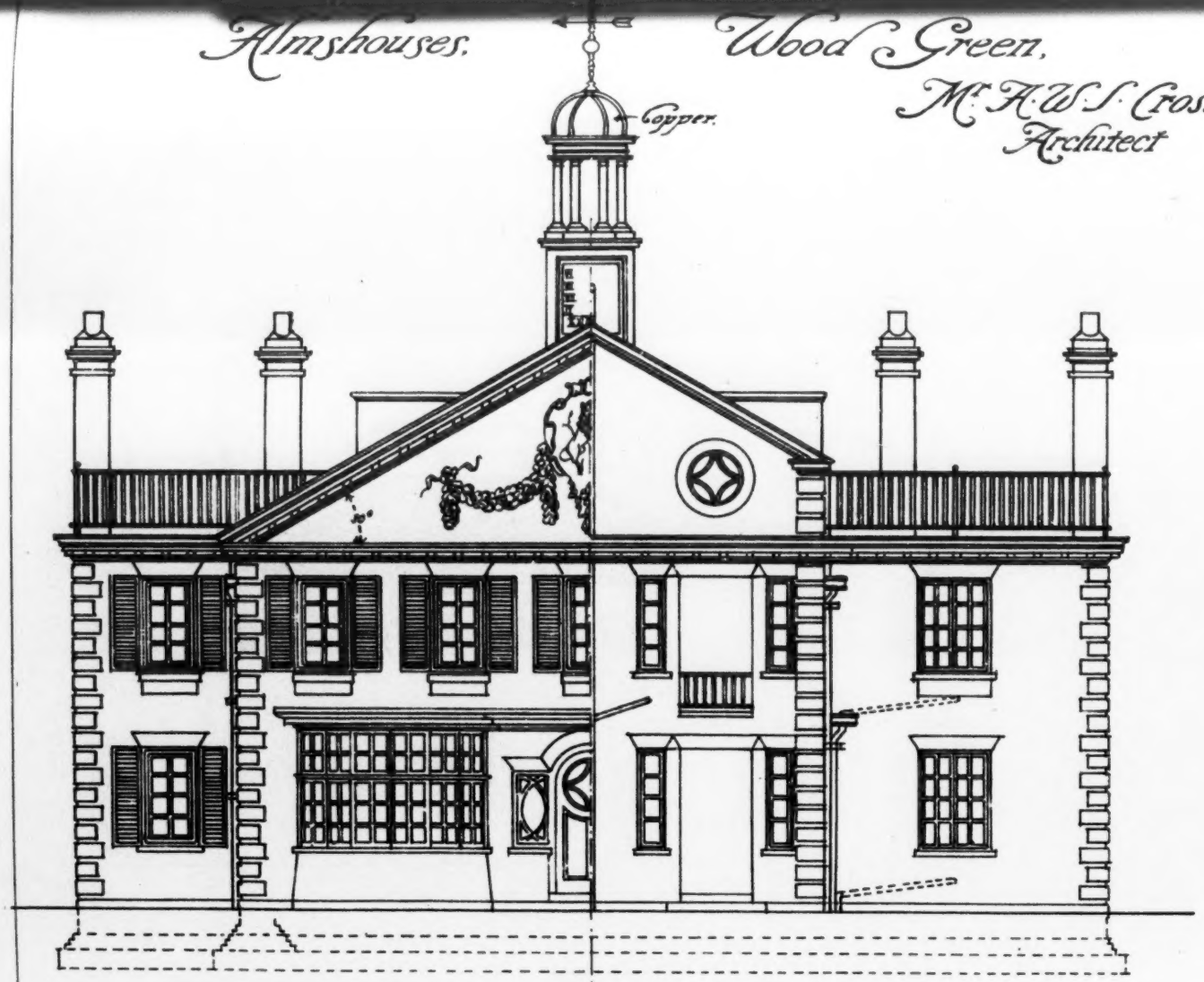
INK PHOTO SPRAGUE & C° LT° 4 & 5 EAST HARDING STREET FETTER LANE E.C.

FOR BOURNEMOUTH.

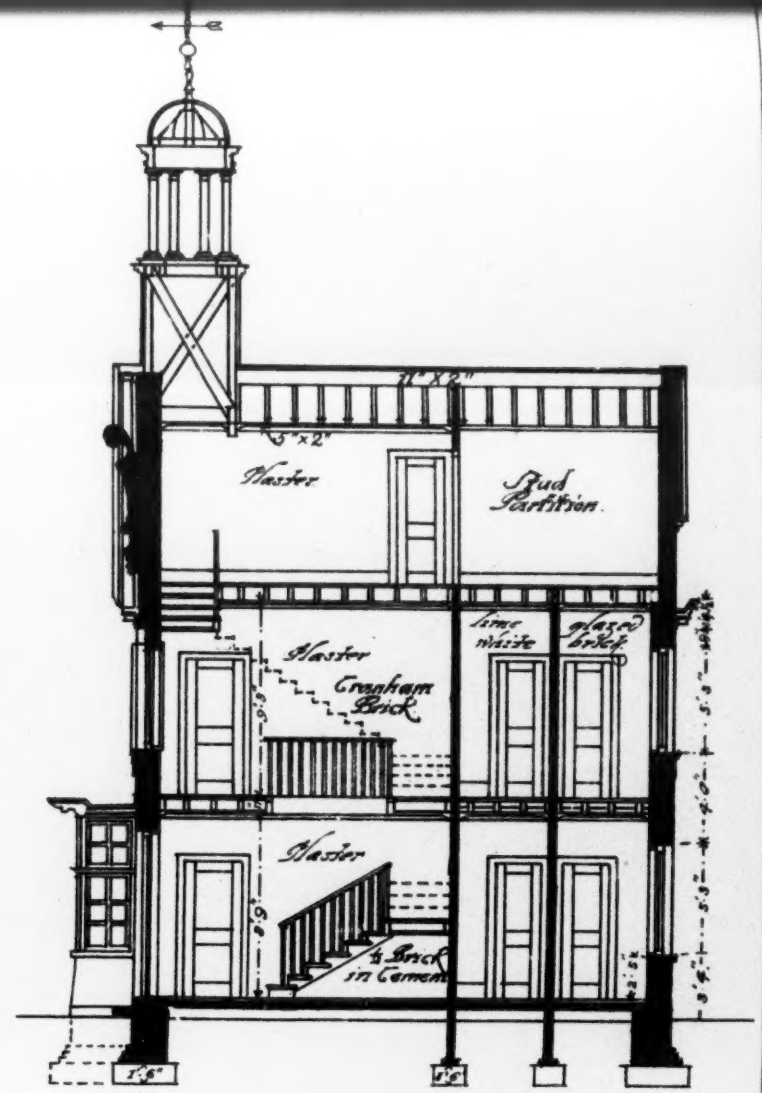
E., Borough Engineer).

Almshouses. Wood Green.

Mr. A.W.S. Cross
Architect



Front Elevation Front Block Rear Elevation.



Section A.B.

Scale of Feet.

10 5 0 10 20 30 40 50

PHOTO LITHO SPRAGUE & C° LT° 4 & 5 EAST HARDING STREET FETTER LANE E.C.

Entrance to New Alms houses Wood Green

Alfred W. S. Cross
Architect.

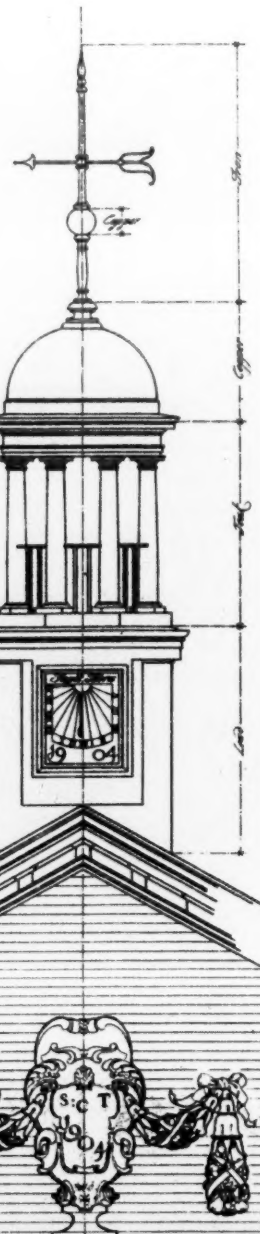
WILTON NEWMAN DEL.

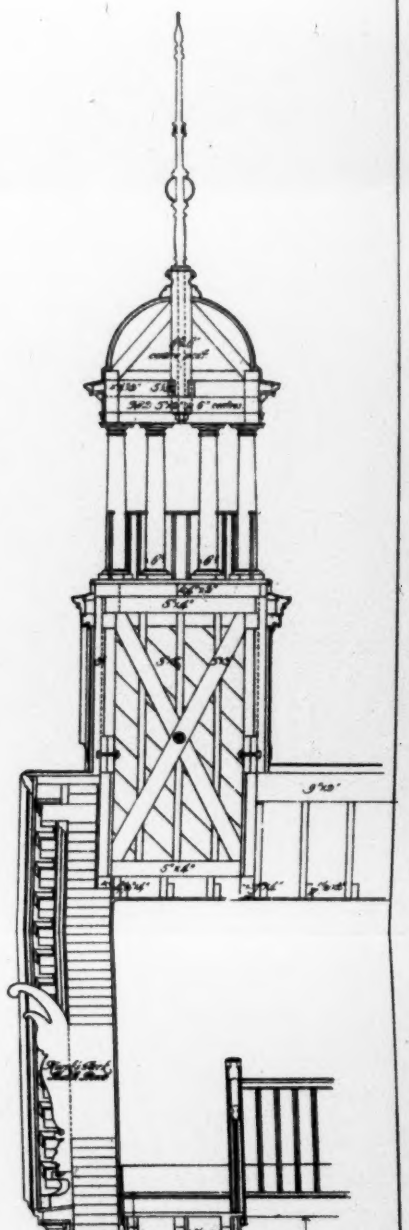
PHOTO LITHO SPRAGUE & C° LT° 4 & 5 EAST HARDING STREET FETTER LANE E.C.

PHOTO LITHO SPRAGUE & C° LT° 4 & 5 EAST HARDING STREET FETTER LANE E.C.

WOOD GREEN ALMSHOVSES

DETAIL ELEVATION AND SECTION





Front Elevation. *Front Block*

Section.

Plan

Plan of Soffit to roof over Porch.

Scale Drawing No: 5

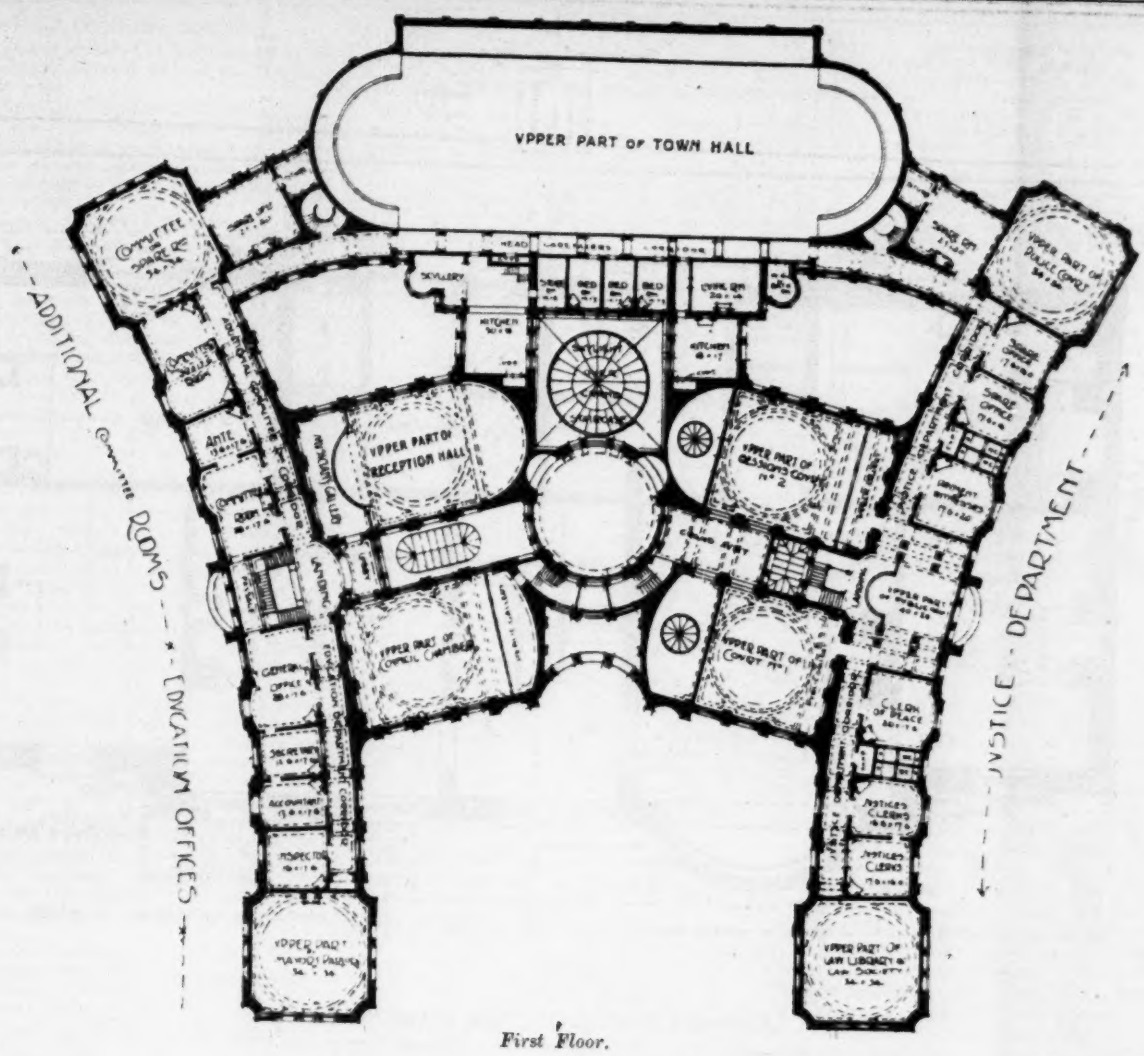
Drawn by

Traced

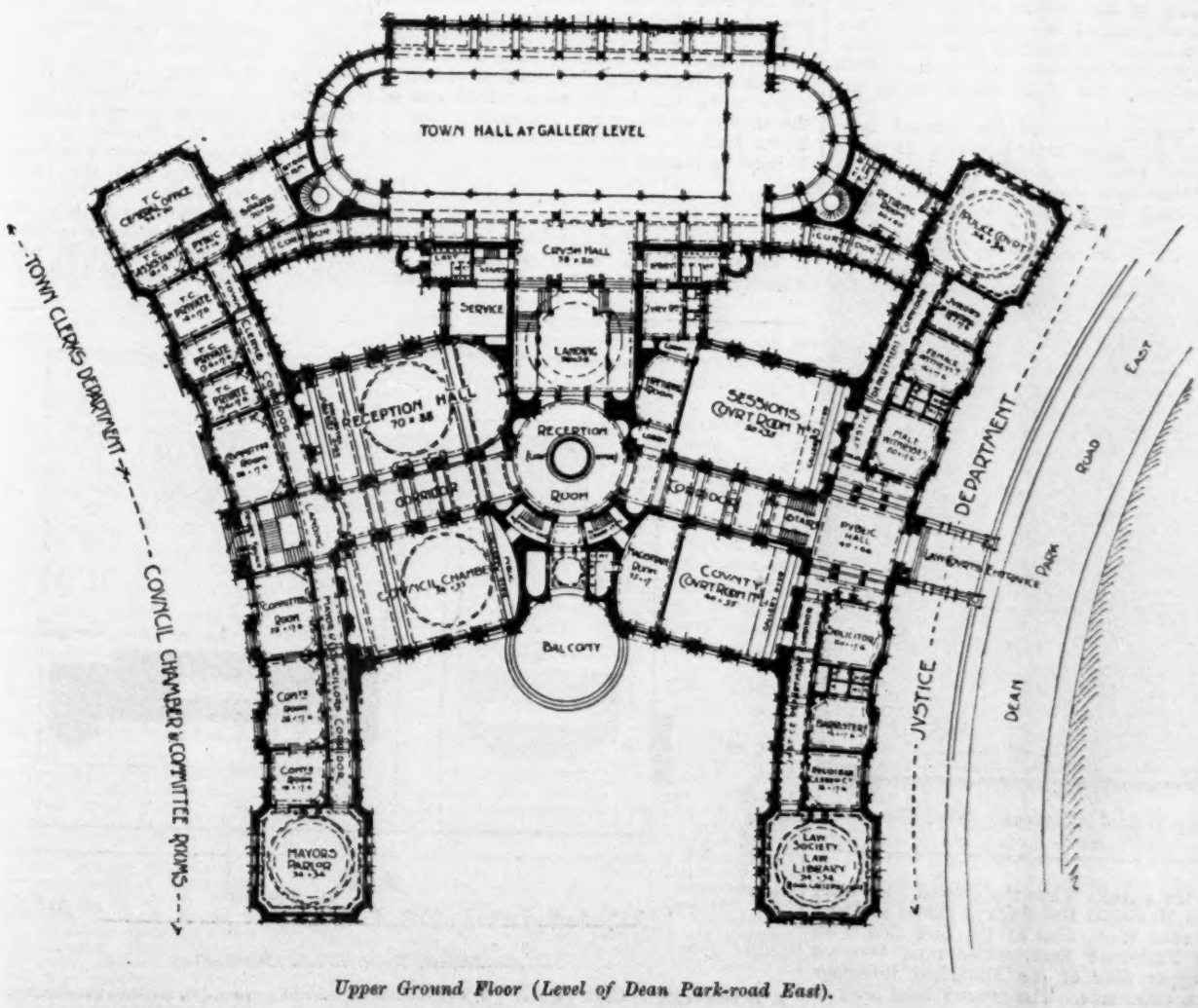
Examined

Alfred W.S. Cross
Architect. F.R.I.B.A.
46 New Bond Street. W.

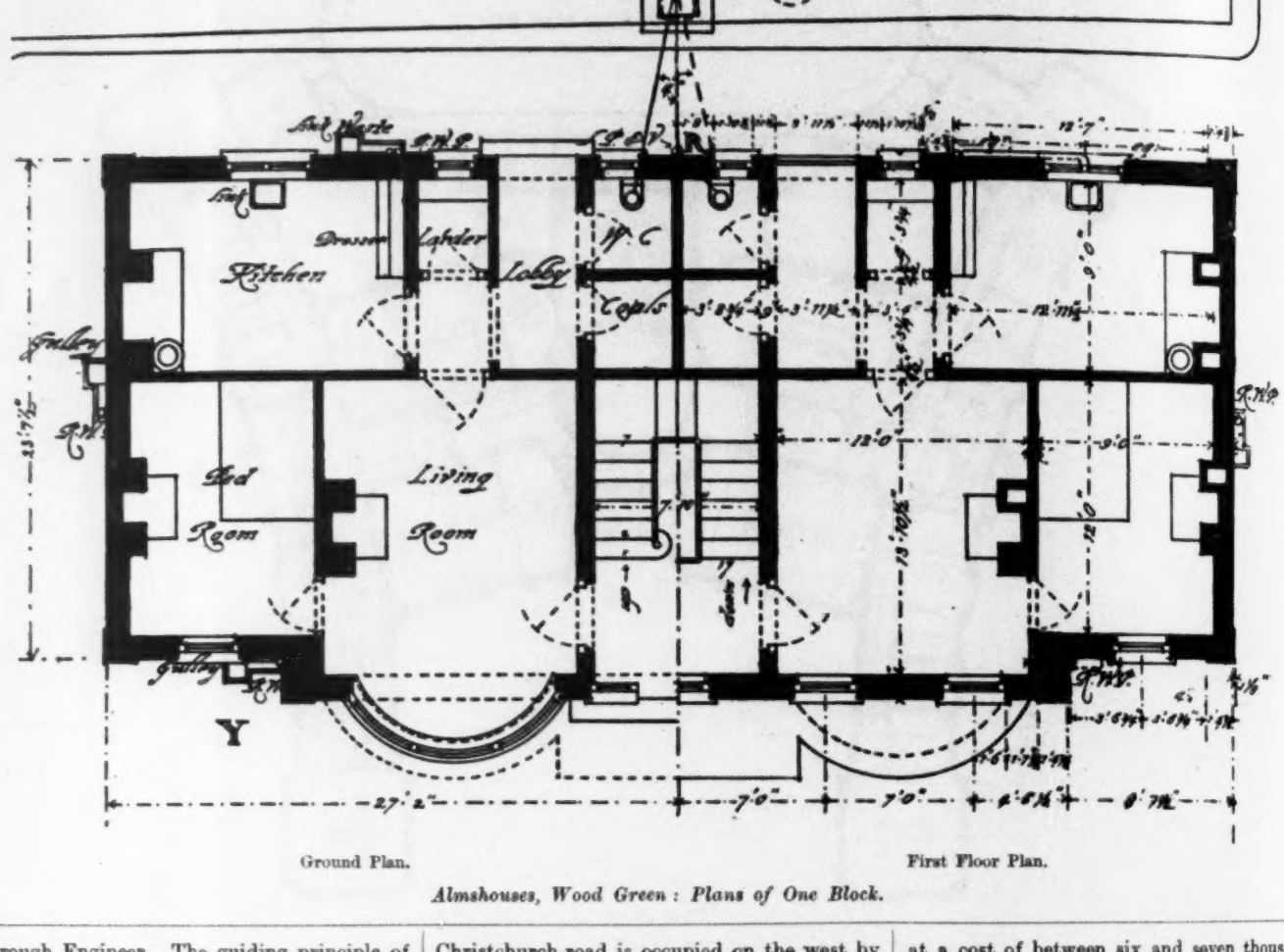
PHOTO LITHO SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET FETTER LANE, E.C.


UPPER PART OF TOWN HALL
UPPER PART OF RECEPTION HALL
UPPER PART OF COUNCIL CHAMBER
UPPER PART OF SESSIONS COURT No. 2
UPPER PART OF COURT No. 1
ADDITIONAL COMMITTEE ROOMS
EDUCATION OFFICES
JUSTICE DEPARTMENT

First Floor.



Upper Ground Floor (Level of Dean Park-road East).



Ground Plan. First Floor Plan.

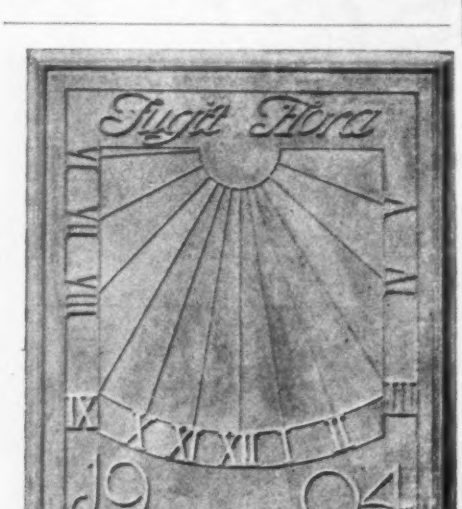
Almshouses, Wood Green: Plans of One Block.

Borough Engineer. The guiding principle of the plan was that its general form should be determined by the outline of the site; and the following out of this idea has led to the evolution of an exceedingly fine and architecturally effective form of plan, which arises naturally out of the conditions of the site.

The varying levels of the ground have afforded an opportunity (which is quite unique) of planning a building in such a manner that three distinct ground floor levels are obtained, each with a separate entrance from the street. Thus the ground floor level of the Municipal Buildings is placed in Dean Park-road West, that of the Law Courts in Dean Park-road East, which level becomes the upper floor of the Municipal Buildings on the other side. The ground floor level of Christchurch-road is occupied on the west by the offices of the Health Department, and on the east by the tramway offices and a portion of the Police Department.

At Mr. Mallows's request we omit the sections, as it is intended to make some modification in them. We give the four plans.

We think the design as a whole one of the finest architectural conceptions for a Town Hall that we have seen, and we hope it may be carried out.



Sun dial at Almshouses, Wood Green.

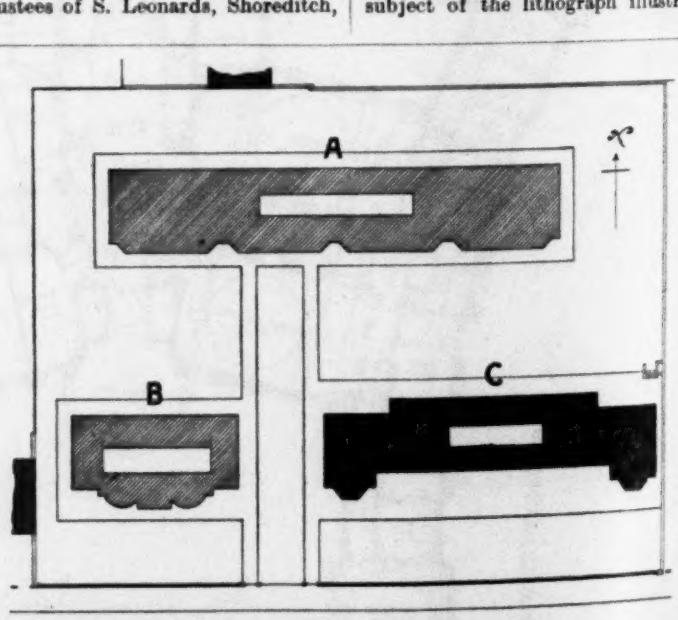
ALMSHOUSES AT WOOD GREEN.

THESE buildings were erected for the Charity Trustees of S. Leonards, Shoreditch, at a cost of between six and seven thousand pounds.

The materials employed were Lawrence's red bricks for the general facings, and Eureka green slates for the roofs. The iron railings and gates and the sundial were supplied by Messrs. T. Elsley & Sons. The cartouche in the pediment of the front building containing married couples' quarters was carved by Mr. W. Hearn.

The general contractor was Mr. C. Gray Hill, of Coventry, and the architect Mr. Alfred W. S. Cross.

We give a block plan showing the general disposition of the buildings on the site, and the detailed plan of block B, which is the subject of the lithograph illustrations.



Almshouses, Wood Green. Block Plan.

A. 26 tenements for single persons. | B. 4 tenements for married persons. | C. Existing almshouses.

COURT OF COMMON COUNCIL.

THE Lord Mayor presided over a meeting of the Court of Common Council at the Guildhall on Thursday last week.

Relief Works.—On the reference of the 16th ult. relative to the London Unemployed Fund, as to putting in hand works of public utility during the coming winter, it was agreed to take steps to expedite any paving or other works which may be in contemplation.

Gas v. Electric Lighting.—The Streets Committee presented a report in connexion with a scheme agreed to in May last for lighting Lower Thames-street and Monument-street by means of incandescent gas under high pressure. The committee also submitted a report from the City Engineer for extending the improved lighting at an increased initial cost of 135*l.* 6*s.*, entailing an additional annual sum of 1*l.* 8*s.*—Mr. Deputy White asked whether the electric lighting company had been afforded an opportunity to replace their old electric lamps with those of a more improved kind.—Mr. Saqui said the electrical engineer had stated that, if the electric lighting company was permitted to adopt up-to-date apparatus the gas companies could not compete successfully with electricity.—Mr. Morton, in answer, said the City of London Electric Lighting Company had had every opportunity of improving its methods of street lighting, but for the last ten years it had done nothing.—The committee's recommendation was carried.

Paving Works.—It was agreed, on the recommendation of the Streets Committee, that the contract with the Val de Travers Asphalte Company for repaving the footway of Nicholas-lane, between King William-street and Cannon-street, be cancelled, and the present York stone be maintained. Also that the Improved Wood Pavement Company be called upon to maintain the carriageway pavement of Fleet-street, between Bouverie-street and Temple-bar, for a period of fifteen years from January 1 next at 1*s.* 6*d.* per yard super per annum, in accordance with the terms of their contract. And that the wood pavement of the Old Bailey be kept in repair pending the rebuilding of the Sessions House by the same firm.

Store-rooms and Dwellings.—The Bridge House Estates Committee were authorised to erect store-room and dwellings for the Superintending Engineer and Tower Bridge-master on land at the southern approach to the Tower Bridge, at an estimated cost of 2,600*l.*

Widening of Fleet-street.—The Improvements and Finance Committee brought up a report relative to the improvement of Fleet-street, and recommending that a formal adjudication be passed to acquire the ground needed to widen the public way in front of No. 59, Fleet-street.—This was agreed to.

Inscription on the New Sessions House.—Mr. Deputy Ellis submitted the report of the City Lands Committee on the question of the inscription at present appearing upon the New Sessions House, and also the name appearing on another part of the building; and recommending:—(i.) That the inscription, "Defend the Children of the Poor and Punish the Wrong-doer," be retained. (ii.) That the new building be called the "Central Criminal Courts."—Mr. Williamson moved that the inscription be removed, and the words "Central Criminal Courts" substituted therefore.—After a long discussion the amendment was lost, and the Committee's recommendation carried.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday, in the County Hall, Spring-gardens, Sir E. A. Cornwall, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend Hammersmith Borough Council 4,400*l.* for public library; the Royal Borough of Kensington 11,500*l.* for housing purposes; Poplar Borough Council 1,817*l.* for paving works; and Woolwich Borough Council 7,500*l.* for electric light installation. Sanction was also given to Woolwich Borough Council to borrow 820*l.* for electric lighting purposes.

Plans of Proposed New Schools, etc.—The Education Committee reported as follows:—

"The Board of Education on May 27, 1902, sanctioned the erection of a school for the accommodation of 800 children, on a site in sub-division K of the West Lambeth (School Board) division, and compulsory powers were subsequently obtained over a site in Lawn-lane (Kennington). The plans provide accommodation as specified below:—Boys, 266; girls, 266; infants, 266; total, 798. (School planned for enlargement.) Halls—Boys, girls, and infants, 40 ft. 6 in. by 28 ft. (Three-story building.) Classrooms—50, 48, 48, 40, 40, 40, boys, girls, and infants. Drawing classroom and science room—each 580 sq. ft. area. Playground on top of school building for girls. Heating by open fires and low-pressure hot-water apparatus. Ventilation by tobin inlet tubes and extract shafts. Area of site—32,380 sq. ft. Area of playgrounds—Boys', 30 sq. ft. per child; girls' and infants', 27 sq. ft. per child, including girls' playground on top of building. It is also proposed to erect a schoolkeeper's house. The total cost of erecting the school is estimated at 20,332*l.*

The Board of Education on August 6, 1901, sanctioned the erection of a school for the accommodation of 800 children in sub-division AQ of the West Lambeth (School Board) division, and compulsory powers were subsequently obtained over a site with a frontage to Garratt-lane, which is known as the Fountain-road site (Wandsworth). The plans provide accommodation as specified below:—Boys, 275; girls, 275; infants, 290; total, 840. (Schools planned for enlargement.) Hall—Boys', 57 ft. 9 in. by 26 ft.; girls', 57 ft. 9 in. by 26 ft. (Two-story building.) Classrooms—Boys', 50, 45, 45, 45, 45, 45; girls', 50, 45, 45, 45, 45, 45. Drawing classroom and science room, 600 ft. area each, over halls. Infants' school (one-story building)—hall, 54 ft. by 26 ft. 6 in.; classrooms, 50, 48, 48, 48, 48, 48. Heating by low-pressure hot-water apparatus and open fires. Ventilation, by windows, tobin inlet tubes and extract shafts. Area of site, 86,900 sq. ft. Area of playgrounds—Boys, 75 sq. ft. per child; girls' and infants', 70 sq. ft. per child. It is also proposed to erect a schoolkeeper's house. The total cost of erecting the school is estimated at 21,414*l.*

The Board of Education on July 27, 1901, sanctioned the erection of a school for the accommodation of 800 children in sub-division AR of the West Lambeth (School Board) division, and compulsory powers were subsequently obtained over a site in Franciscan-road (Wandsworth) for the purpose. The plans provide accommodation as specified below:—Boys, 256; girls, 256; infants, 292; total, 804 (School planned for enlargement.) Halls—Boys', 56 ft. by 26 ft. 4½ in.; girls', 56 ft. by 26 ft. 4½ in.; infants', 54 ft. by 26 ft. 6 in. (Three-story building.) Classrooms—Boys', 48, 48, 40, 40, 40, 40; girls', 48, 48, 40, 40, 40, 40; infants', 50, 50, 48, 48, 48, 48. Drawing classroom and science room, 600 sq. ft. area each. Heating by low-pressure hot-water apparatus and open fires. Ventilation by tobin inlet tubes and extract shafts; area of site, 76,200 sq. ft. Area of playgrounds—Boys', 81 sq. ft. per child; girls', 54 sq. ft. per child; infants', 47 sq. ft. per child. It is also proposed to erect a schoolkeeper's house. The total cost of erecting the school is estimated at 19,690*l.*

The Committee also recommended:—

That the estimate of expenditure on capital account of 1,562*l.*, submitted by the Finance Committee in respect of the preparation of working drawings, etc., in connexion with the schools proposed to be erected on the undermentioned sites, be approved—(*a*) Kennington—Lawn-lane (new school). (*b*) Wandsworth—Fountain-road (new school). (*c*) Wandsworth—Franciscan-road (new school). (*d*) Poplar—Janet-street (special school). (*b*) That expenditure on capital account, not exceeding 1,562*l.*, in respect of the preparation of working drawings, etc., in connexion with the schools proposed to be erected on the sites named in the foregoing resolution be sanctioned."

Mr. McKinnon Wood said that the approximate estimate of cost of erecting the three new day schools worked out at 25*l.* 0*s.* 8*d.*, 26*l.* 15*s.*, and 24*l.* 12*s.* per head respectively. This was really the beginning of the Council's school-building operations, and, in the near future, these operations would be on a large scale. A large number of non-provided schools were unsuitable, and they would have to find fresh school places. He thought they should have some report on the subject so that the Council could give an intelligent vote on the matter.

Sir Melville Beachcroft moved, and Mr. H. P. Harris seconded, that the recommendation be referred back in order that the Committee might report as to the rules which had hitherto governed the planning of new schools, as to whether any alteration thereof is desirable or practicable, with a view to greater economy of construction.

The Rev. A. Jephson said it was no good building in a cheap and nasty style, for many of the non-provided schools which, since 1870, had been built cheaply, were now in a deplorable condition.

Sir W. Collins said that they did not want to go back to the old jerry-built schools of past days. He would give the information asked for, but he could hold out no prospect that these new schools would not be required.

The amendment, on this understanding, was withdrawn, and the recommendations were postponed.

The Works Committee.—The Education Committee reported, further, as follows:—

"The Council on May 23, 1905, approved an estimate, amounting to 3,241*l.*, in respect of the erection of a school on the "Beaufort-house" site (Fulham), for the accommodation of 60 mentally defective elder boys. The Council, on July 18, 1905, also approved a supplemental estimate of 132*l.* for additional works required by the Board of Education. The Council on the former date decided that the work should be carried out by Messrs. Stimpson & Co., as an addition to their contract for the new elementary school on the site. In consequence, however, of the death of their principal, this firm are unable to erect the special school. We have ascertained that the Works Committee are prepared to undertake the work at the amount of the architect's estimate, viz., 3,384*l.* . . .

It was now recommended:—

(*a*) That the resolutions of May 23, 1905, and July 18, 1905, approving estimates of 3,241*l.* and 132*l.* respectively, and sanctioning expenditure of these amounts in respect of the erection of a school on the "Beaufort-house" site (Fulham), for the accommodation of sixty mentally defective elder boys, and agreeing to place the work in the hands of Messrs. Stimpson & Co. be rescinded. . . .

(*d*) That the work of erecting a school on the "Beaufort-house" site (Fulham) for the accommodation of sixty mentally defective elder boys be executed without the intervention of a contractor; and that the drawings, quantities, specification, and building estimate of 3,384*l.* be referred to the Works Committee for that purpose."

An amendment was moved by Mr. Goodrich to refer the matter back in order that the work might be put out to tender, but, after a brief discussion, the amendment was defeated, and the recommendations were agreed to. In the course of the discussion which took place on the matter, Sir William Collins said, in answer to a remark made by a previous speaker, that the builders of London had expressed their disinclination to tender against the Works Department. Mr. Howell J. Williams said that the feeling amongst builders was not antagonistic to the Department. The Department had a fine depôt and some splendid machinery, and was it wise to starve it? The Council should help the Department to become a greater success than it had been. Mr. E. White said he thought the Council ought to know whether, if the tender of the Works' manager was below the architect's estimate, the work was given to the Department at the price of the estimate, and whether, if above, the work was cut down to suit the price of the manager. It was true that years ago Mr. Mowlem Burt had said that contractors would not care to tender against the Department, but since then things had changed, and he was certain that the builders of London would be glad to tender if the chance were given them. The Works Department did their work well, and so did most builders, and there was nothing to choose between them in that respect, but work ought to be tendered for, and if it were, and the Department came out lowest, the general satisfaction would be great.

Central School of Arts and Crafts, Holborn—Light and Air.—The Education Committee reported as follows:—

"The Council on June 6, 1905, sanctioned expenditure not exceeding 1,150*l.* in respect of the compensation and costs in connexion with the settlement of the claim made by the trustees of the Strickland estate in consequence of damage to their rights of light and air by the erection of the Council's Central School of Arts and Crafts (Holborn). An arrangement has been arrived at which provides, *inter alia*, that, when the trustees demolish their old buildings in Orange-street, which are opposite the Council's Theobald's-road fire-station, they are to be at liberty to rebuild the front wall to a height of 52 ft. and to an angle of 45 degrees beyond. We are advised that this is a reasonable stipulation, and we have communicated with the Fire Brigade Committee accordingly. The surveyor to the trustees has asked that, as further negotiations have been necessary in order to bring the arrangement to a conclusion satisfactory to both parties, the fee to be paid to him may be increased from 30 to 35 guineas. We are of opinion that this request is not unreasonable. The sum already sanctioned by the Council will be sufficient to meet the additional expenditure."

The Committee recommended accordingly, and the Council agreed.

Apprenticeships.—The following recommendations of the Education Committee were agreed to:—

"(*a*) That no expenditure be incurred by the Council in respect of apprenticeship premiums.

(*b*) That, with a view to establishing a system of industrial scholarships and of trade schools, an inquiry be made among the employers in the skilled mechanical trades in order to discover:—

(i.) Whether the employers would co-operate with the Council in encouraging and affording facilities for apprentices or learners to attend evening classes on technical subjects.

(ii.) Whether they would be prepared to allow apprentices or learners to be present for part of the week at trade classes held during the day.

(iii.) Whether they would be willing to take as apprentices or learners children, as they leave school, and permit them to attend, for part of the week, trade classes held during the day.

(iv.) The extent of the demand for trade schools and the most suitable industries to be taught therein in the various districts of London.

(v.) How far the employers would be prepared to assist the Council by their advice in the establishment of such schools, and by awarding the pupils attending them special privileges."

Archæological Discoveries.—The Local Government Records and Museums Committee reported as follows:—

"We report that during excavations on the site for a fire-station in Cannon-street a Roman bath was unearthed. The inside dimensions of the bath are 6 ft. 3 in. by 10 ft. 6 in., and the weight about seven tons. On hearing of the discovery, steps were

immediately taken to preserve this valuable and interesting relic, which we had hoped it would have been possible to place in the Horniman Museum, but the accommodation there was insufficient. The Parks Committee have, however, offered to undertake temporarily the custody of the bath, and to store it in the mansion in Clissold Park. Operations are now in progress for the removal and preservation of the bath.

In the course of the erection of a factory in Jewry-street, Aldgate, there was discovered a portion of the old London wall, 20 ft. in length and 7 ft. in height. The owner of the factory is aware of the antiquarian interest in the relic, and has arranged for it to be kept in position, so that it will now project about 3 ft. into one of the rooms on the lower ground floor of the new factory; but as an additional precaution, we have suggested to him that the wall should be protected by a galvanised iron netting similar to that round the Roman remains at the Coal Exchange."

London Squares and Enclosures (Preservation) Bill.—The Parliamentary Committee reported that they had been in negotiation with the various owners of garden squares and enclosures in London with a view to securing their sympathy with, and support to, the object which the Council seeks to attain, viz., the preservation as breathing spaces of the large number of garden squares and enclosures which, in the interests of the public health of London, it is eminently desirable should remain unbuilt upon. In the result they state that up to the present the owners of some fifty squares and enclosures, which comprise an area of, approximately, 35 acres, have consented to the inclusion of their properties in the Bill. Among the owners thus consenting are the following:—The Crown (represented by H.M. Office of Woods), the Marquess of Northampton, Lord Camden, the Ecclesiastical Commissioners, Sir John Dickson-Poynder, M.P., the Provost and College of Eton, and the Governors of St. Bartholomew's and St. Thomas's Hospitals. The only material alteration made in the Bill since its approval by the Council on August 1 is the addition of a clause inserted at the instance of H.M. Office of Woods to the effect that the Council shall, if so required, undertake the management and maintenance of the scheduled lands that are under the charge of the Commissioners of Woods, and which consist of three small enclosures.

Rotherhithe Tunnel.—The Bridges Committee reported what progress has been made with the construction of the tunnel between Shadwell and Rotherhithe, authorised by the Thames Tunnel (Rotherhithe and Ratcliff) Act, 1900. The Council, on February 9, 1904, accepted the tender, amounting to 1,088,484*l.* 16s. 1d., of Messrs. Price & Reeves in respect of the work. The order to commence work was given to the contractors on April 20, 1904, and the time allowed for the completion of the work is five and a half years from that date. Up to the present time satisfactory progress has been made with the construction work. Of the two shafts on the south side of the river, No. 1 shaft has been sunk to its final level, and the concreting at the bottom is nearly finished, while No. 2 shaft, which is on the bank of the river, is being built. On the north side of the river No. 3 shaft is completed. In order to facilitate the construction of the tunnel under the river, the contractors are, in the first instance, driving a small tunnel, 12 ft. 6 in. in diameter, lined with cast-iron. This tunnel has now been driven for a distance of 600 ft. under the river from shaft No. 3 towards the south side of the river; the air pressure used varies from 14 lb. to 20 lb. per square inch, according to the state of the tide. At the bottom of No. 3 shaft, a large shield for the driving of the permanent tunnel is being erected. The cut and cover work on the south side is practically completed, and the opening approach is well in hand, while, as regards the north side, the excavation for the open approach has been commenced. The value of the work executed to date is estimated at 135,000*l.*, or about 12 per cent. of the contract amount. In addition, considerable progress has been made with the acquisition of the property needed for the approaches to the tunnel.

The Charing Cross Station Disaster.—Replying to a question, Capt. Hemphill said that the Council had no control over the buildings belonging to railway companies, but that it was desirable that they should have. The station was now under the observation of the Council's officers.

The Council soon afterwards adjourned.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Strand.—An addition to an iron and glass shelter at the entrance to the Royalty Theatre, Nos. 73 and 74, Dean-street, Soho (Messrs. Smee & Cobay for Miss K. Santley).—Consent.

Poplar.—An iron and glass shelter in front of the Prince's Theatre, East India Dock-road, Poplar (Messrs. Owen & Ward for Mr. C. Sounes).—Consent.

Hackney, Central.—Buildings upon a site abutting upon the western side of Chatham-place and southern side of Belsham-street, Hackney (Messrs. Hodson & Whitehead for Messrs. Hodson & Rowlandson).—Consent.

Wandsworth.—A house on the northern side of Church-lane, Tooting, to abut upon the western side of Moring-road (Messrs. Nash & Lillywhite for Mr. J. S. Trotter).—Consent.

Hampstead.—An addition at the side of the porch at No. 5, Oppidans-road, Primrose-hill, Hampstead (Mr. W. E. Sanders for Mrs. C. Braby).—Consent.

Hackney, North.—The retention of a projecting hood to a cottage at the rear of No. 69, Clapton-common, Hackney, abutting upon Braydon-road (Mr. A. C. Jackson).—Consent.

Islington, East.†—The retention of projecting signs at No. 151, Englefield-road, Islington (Mr. A. Grabham).—Consent.

Islington, East.—The retention of a greenhouse at the rear of No. 66, Sotheby-road, Islington, southward of No. 64 (Mr. A. Mitchell Torrance for Mr. H. C. Harris).—Consent.

Kennington.—That the application of Mr. F. Hingston for an extension of the periods within which the erection of bay windows and a porch to No. 52, Priory-road, South Lambeth, was required to be commenced and completed, be granted.—Consent.

Kensington, North.—Bay windows and pent roofs to fourteen dwelling-houses on the western side of Wallingford-avenue, St. Quentin-avenue, North Kensington (Messrs. Trant, Brown, & Humphreys).—Consent.

Lewisham.—One-story shops on part of the forecourts of Nos. 29 and 31, Beacon-road, Hither Green, Lewisham (Mr. H. Kent).—Consent.

Norwood.—The re-erection of No. 26, Vaughan-road, Lambeth (Mr. G. G. Rogers for Mr. H. G. Westcot).—Consent.

Wandsworth.—A porch to a house on the eastern side of Kersfield-road, Wandsworth (Mr. A. Williams).—Consent.

Wandsworth.—A one-story shop as an addition to No. 54, High-street, Tooting (Mr. S. S. Dottridge for Mr. E. Dottridge).—Consent.

Marylebone, West.—Permission to retain a projecting shop front with cornice and wooden trusses at No. 105, Church-street, St. Marylebone (Mr. W. R. Phillips for Mr. W. Prested).—Refused.

Hampstead.—Permission to retain an iron and glass porch at No. 54, Glenlock-road, Hampstead, abutting upon Glenilla-road (St. Pancras Iron Work Co., Ltd., for Mr. H. Edgeton).—Refused.

St. Pancras, North.—A one-story shop on land adjoining the Catholic Apostolic Church, Gordon House-road, St. Pancras (Mr. S. E. Spencer).—Refused.

Lewisham.—A building at the rear of No. 132, Arngask-road, Catford, to abut upon Torridon-road (Mr. H. Lewis-Upham for Mr. H. Bown).—Refused.

Wandsworth.—A one-story shop on part of the forecourt of No. 408, Merton-road, Southfields, Wandsworth, to abut also upon Lavenham-road (Mr. T. Aldred for Mr. W. G. Davey).—Refused.

Westminster.—A one-story shop in front of No. 79, Victoria-street, Westminster (Messrs. Griffin & Woollard for Mr. H. Webley).—Refused.

Width of Way.

Hampstead.†—Retention of a building at "Northcourt," Hampstead, with the forecourt boundary fence at less than the prescribed distance from the centre of the roadway of College Villas-road (Messrs. Hudson & Hunt for Mr. W. Scott).—Consent.

Strand.—An addition to Nos. 10 and 11, Hop-gardens, St. Martin's-lane, Strand, with external walls at less than the prescribed distance from the centre of the roadway of Hop-gardens (Messrs. George Trollope & Sons and Colls & Sons, Ltd., for Messrs. Johnson, Matthey, & Co.)—Consent.

Wandsworth.—The retention of the engineer's cottage at the Grove Hospital on the north side of Blackshaw-road, Tooting, with the forecourt boundary fence at less than the prescribed distance from the centre of the roadway of the street (Mr. W. T. Hatch for the Metropolitan Asylums Board).—Consent.

Width of Way and Projections.

Strand.—Buildings with projecting oriel windows and balconies on a site abutting upon the west side of Kingsway, and upon the sites of No. 3, Great Queen-street, and No. 64, Parker-street, Strand (Mr. A. Sykes for Mr. O. Owen).—Consent.

Strand.—A wood and glass showcase to No. 224, Regent-street, to abut upon Argyll-place (Messrs. F. Sage and Co. (1905), Ltd., for Messrs. T. & J. Perry).—Refused.

Lines of Frontage and Space at Rear.

St. Pancras, South.—A building (University College Hospital, Medical School and Nurses' Home) on a site abutting upon Gower-street, University-street, and Huntley-street, St. Pancras (Mr. P. Waterhouse).—Consent.

Strand.—The re-erection of Nos. 48 and 49, Jermyn-street, St. James', with balconies (Mr. W. Woodward for Mr. S. T. Miller).—Consent.

Space at Rear.

Hackney, Central.—A deviation from the plan approved for the erection of a building on a site abutting upon the west side of Mare-street, and north side of London-lane, Hackney, so far as relates to an increase in the height of the building (Mr. C. G. Smith for Mr. W. Frith).—Consent.

Wandsworth.—A modification of the provisions of sect. 41 with regard to open spaces about buildings, so far as relates to the proposed erection of buildings on the west side of Streatham-hill, at the corner of Drewstead-road, Wandsworth (Messrs. Taylor & Sons).—Refused.

Deviation from Certified Plans.

Strand.—A deviation from the plans approved for the erection of a building on the site of Nos. 36 and 36A, St. James'-street, and No. 64, Jermyn-street, St. James', so far as relates to the substitution of one air duct for two air ducts (Mr. W. Woodward for Mr. L. Thomas).—Consent.

Formation of Streets, etc.

Wandsworth.—The retention of hoardings at the ends of Elborough-street, Southfields, Wandsworth (Messrs. Palmer & James).—Consent.

Norwood.—That an order be issued to Messrs. R. Ellis & Son, sanctioning the formation or laying out of a new street for carriage traffic upon the Sanders estate, to lead from Denmark-hill to Dumbleton-road, Lambeth (for Mr. A. A. Sanders).—Consent.

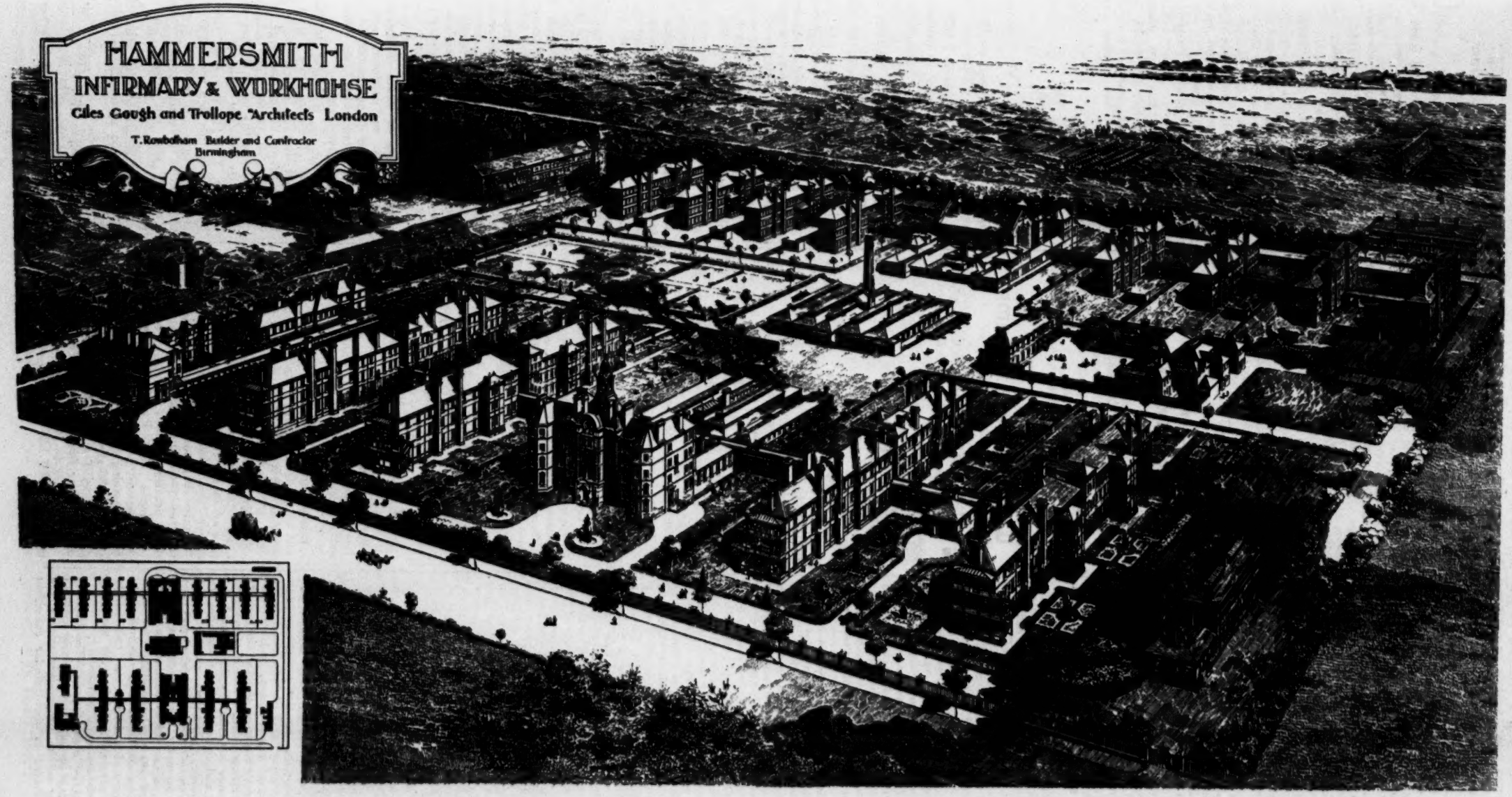
Bethnal Green, South-west.—That an order be issued to Mr. A. P. Stokes refusing to sanction the adaptation as a street for foot traffic only of a way known as "Reuben-street" out of the east side of Brady-street, Bethnal Green (for Mrs. E. Seward and Mr. R. W. Seward).—Refused.

The recommendations marked † are contrary to the views of the local authority.

NEW WORKHOUSE AND INFIRMARY, WORMWOOD SCRUBS.

THESE buildings, which are said to embody the latest and most approved practice in the design of institutions for the care of the sick and destitute poor, have been erected on a site of about 14 acres in extent, situated to the north of Ducane-road, and adjoining the large open space of Wormwood Scrubs. The buildings now completed provide accommodation for 330 patients in the infirmary and for 428 inmates in the workhouse, together with the requisite nursing and supervisory staffs. Both divisions of the institution have been so planned as to be readily capable of being extended when required. Thus, by the erection of additional blocks, and without disturbance of those already built, it is possible to raise the accommodation for patients in the infirmary to a total of 616, and of inmates in the workhouse to a total of 840.

Infirmary.—The infirmary, which faces the Ducane-road, has in the centre a large administrative block, containing the committee-rooms, medical officer's residence, dispensary, and quarters for the staff (apart from nurses, who have a separate home), also the central kitchen, larders, store-rooms, linen-rooms, staff mess-rooms, etc. Passing through the administrative block, and leading therefrom eastward and westward, is a main corridor, giving access on the east side to the pavilions for male patients, and on the west to those for female patients. The principal patients' blocks, each of which is three stories in height, and provides accommodation for 150 patients, are planned as double pavilions—that is to say, that on each floor there is, to the north of the main corridor, a large ward, complete with all its appurtenances, and in line with this, but to the south of the main corridor, is another similar large ward with its adjuncts. Each of the large wards above referred to contain twenty-four beds, and has, in convenient proximity, its own group of supplementary apartments, comprising a nurses' duty-room, with separate larder; a small ward, to contain one bed; a bathroom, lavatory, linen-room, store-room, and a projecting annexe containing the sanitary offices. Each of the large wards to the


HAMMERSMITH
INFIRMARY & WORKHOUSE
Giles Gough and Trollope Architects London
T. Rowbotham Builder and Contractor
Birmingham

south has, in addition, a dayroom for the use of convalescent patients, with a verandah on its sunny and sheltered side. A block or pavilion for lying-in cases is provided, and is placed to the west of the main buildings and well separated therefrom. It is approached by means of a covered way leading from the end of the main corridor on the female side. The nurses' home is a detached three-story building, having a cheerful south aspect, and situated within the south-west angle of the site. It is approached from the main building by a covered way, and contains accommodation for forty-one persons. Each nurse has a separate bedroom, and there are large general sitting-rooms and a lecture-room. The operation block is placed to the north of the main corridor, and approached therefrom by a short connecting corridor, being thus well separated from the ward blocks. It contains a large specially arranged and lighted operation-room, an anæsthetic-room, and a surgeon's consulting-room.

Workhouse.—The buildings of the workhouse are quite separate from the infirmary, and are confined to the northern portion of the site, with the exception only of the receiving block, which is combined with the porter's lodge, placed at the south-east angle of the site, and contains separate receiving-rooms for males and females, each with examination-room, bathroom, etc., and with an eight-bed observation dormitory adjoining. On the first floor are two store-rooms for inmates' own clothes, and in rear is a disinfecting apparatus. The whole block is arranged with a view to its supervision by the porter and portress, whose lodge adjoins. The administrative block is placed in the centre of the range of workhouse buildings, and contains committee-rooms, master's residence, library, surgery, and residential quarters and mess-rooms for the staff, central kitchen, larders, store-rooms, linen-rooms, etc., and the general dining hall, which will be used also as a chapel. Covered ways running east and west connect this block with the workhouse pavilions, of which there are two for males to the east of the administrative block, and two for females to the west, each three stories in height. The designing of these pavilions has presented a somewhat difficult problem in planning, it being necessary, in order to obtain due classification, that each pavilion should contain separate accommodation for five different classes of inmates, each class requiring its own separate dayroom and dormitory. This sub-division, which is as necessary for the comfort of the inmates as for their proper supervision, is provided in the pavilions that have been erected, each of which contains the requisite dayroom and dormitory space for the following inmates, viz. :—Ten very infirm, twenty infirm, twenty-five Class A aged healthy, thirty Class B aged healthy, and fifteen young able-bodied. Proper bathroom, lavatory, and sanitary accommodation is also provided, together with apartments for the officers in charge. The plans provide for the erection when required of four more similar pavilions. Quarters have also been provided in a separate building for six aged married couples, each having a separate bed-sitting-room, with use of common-room, scullery, etc. It is hoped in this way to mitigate the sufferings of aged couples who have been driven by misfortune to seek the shelter of the workhouse, and whom, in the absence of this accommodation, it would be necessary to separate.

Laundry Block.—This is placed in the centre of the site, midway between the workhouse and infirmary, both of which it serves. It contains separate departments for the workhouse and for the laundry, but these are so arranged that they may be worked either independently or together, as may be found desirable. The engineers' department is contained in a lofty basement story below the laundry block. Here is a boiler-room containing four large Lancashire boilers, which supply steam for warming the whole of the buildings, for heating water, for cooking, for driving the engines and pumps, and for use in the laundry. The boilers are equipped with an economiser, which heats the feed-water by utilising the waste heat from the furnaces. This department also contains the engine-room, pump-room, engineers' workshops, etc., and a large coal store. Two systems of subways branch out from the boiler-room to the workhouse and infirmary respectively, and provide facilities for the distribution of water, steam, and condense pipes and electric wires to all parts of the institution. The workshop block, which is an adjunct to the workhouse, is placed to the east of the laundry block, and contains large workshops for carpenters, joiners, plumbers, smiths, wood choppers, etc., also stone-breaking shed and corn mills, the whole under the supervision of the labour master, whose office commands all the premises. Here also is a large room where such of the inmates as may have a prospect of again setting up a home of their own may temporarily store their furniture. Adjoining the workshop block are the stables and the mortuary.

Warming and Hot-Water Supply.—The warming of the buildings is by means of radiators supplied with hot water on the low-pressure system, the water being heated in multitubular calorifiers placed in the basements of the various blocks, and, supplied with steam at a pressure of 40 lb. to the square inch, brought through pipes from the central boilers. Similar calorifiers are also used for the supply of hot water to baths, lavatories, sinks, etc. Open fireplaces are also extensively used throughout the buildings. The institution is lighted throughout by means of electricity, supplied from the Hammersmith Borough Electricity Works. The supply is a high-pressure alternating one, the voltage being reduced, by means of transformers, before distribution.

The architects are Messrs. Giles, Gough, & Trollope. The steam boilers are supplied by Messrs. Galloways (Manchester); warming and cooking plant by Messrs. Moorwood, Sons, & Co. (Sheffield); laundry machinery by Messrs. Bradford & Co. (Salford); lifts by Messrs. Waygood & Co.; telephones and bells by the Private Wire and Telephone Company; electric lighting by Messrs. W. J. Fryer & Co.; sanitary fittings by Messrs. Twyford & Co. (Hanley); boundary walls by Messrs. Willcock & Co. (Wolverhampton). The buildings were formally opened on the 1st inst., by Princess Henry of Battenberg.

BOOKS RECEIVED.

BAKU: AN EVENTFUL HISTORY. By J. D. Henry. (Archibald Constable & Co.)

THE HIGH-ROAD OF EMPIRE; Water-colour and Pen-and-ink Sketches in India. By A. H. Hallam Murray. (John Murray. 21s.)

AXEL HERMAN HAIG AND HIS WORK. By E. A. Armstrong. (The Fine Art Society.)

The Student's Column.

STEAM BOILERS AND PIPES.—XXIII.

THE FLOW OF STEAM (*continued*).

IN formulæ (58) to (63) we have variants of a simple rule for calculating the weight of steam conveyed through pipes of given diameter and length, with a given loss of pressure.

For direct determination of the pipe diameter for a given discharge of steam and length of pipe, with a given loss of pressure, the formulæ require inversion.

As formulæ (62) and (63) are the most convenient representatives of the rule, and give results that may be accepted for general guidance, we adopt these as the basis of the subjoined rules for pipe diameters :—

Pipe diameter for weight of steam per second—

From formula (62) we obtain

$$d^5 = \frac{W^2 l}{(p_1 - p_2)\,D}$$

and

$$d = \sqrt[5]{\frac{W^2 l}{(p_1 - p_2)\,D}} \quad \ldots\ldots (64)$$

Pipe diameter for weight of steam per minute—

From formula (63) we obtain

$$d^5 = \frac{W^2 l}{60^2 (p_1 - p_2)\,D}$$

and

$$d = \sqrt[5]{\frac{W^2 l}{3{,}600\,(p_1 - 0_2)\,D}}$$

This could be written

$$d = \sqrt[5]{\frac{W^2 l}{(p_1 - p_2)\,D}} \div \sqrt[5]{3{,}600}$$

But $\sqrt[5]{3{,}600} = 5{\cdot}142$,

and $\frac{1}{5{\cdot}142} = 0{\cdot}1945$, say, $0{\cdot}2$.

Whence

$$d = 0{\cdot}2 \sqrt[5]{\frac{W^2 l}{(p_1 - p_2)\,D}} \quad \ldots\ldots (65)$$

The fifth root of a number can be obtained most conveniently by logarithms, as indicated in the following example, which also serves to illustrate the application of formulæ (64) and (65) to a simple calculation of the kind frequently necessary in daily practice.

Example 30.—Required the internal diameter of a pipe, 500 ft. long, suitable for conveying 2-lb. weight per second of steam at 50 lb. per square inch absolute pressure, with a loss of pressure not exceeding 3 lb. per square inch.

Here $W^2 = 4$; $l = 500$ $(p_1 - p_2) = 3$, and, by Table XXV., $D = 0{\cdot}1202$.

(a) Substituting these values in formula (64) we have

$$d = \sqrt[5]{\frac{4 \times 500}{3 \times 0{\cdot}1202}} = \sqrt[5]{\frac{2{,}000}{0{\cdot}3606}} = \sqrt[5]{5{,}546}$$

To find the fifth root of 5,546 we proceed as follows:—Taking from a table of logarithms the mantissa of *log* 5,546 = ·7440 and adding the index 3 we have

$$log\ 5{,}546 = 3{\cdot}7440,$$

which, divided by the number indicating the required root, gives

$$3{\cdot}7440 \div 5 = 0{\cdot}7488.$$

Referring to a table of antilogarithms, the corresponding number is found to be 5604.

The index 0 indicates that the answer is between 1 and 10. Hence the correct position of the decimal point is immediately after the first numeral, and we have 5·608 as the fifth root of 5,546.

Therefore the required diameter of the pipe is 5·608 in.

(b) Calculating the pipe diameter from the delivery per minute, which is $2 \times 60 = 120$ lb. weight of steam, we substitute this quantity, with the other values, in formula (65).

Thus

$$d = 0{\cdot}2 \sqrt[5]{\frac{120^2 \times 500}{3 \times 0{\cdot}1202}} = 0{\cdot}2 \sqrt[5]{\frac{7{,}200{,}000}{0{\cdot}3606}} = 0{\cdot}2 \sqrt[5]{19{,}960{,}000}$$

Proceeding as before, we find the fifth power of 19,960,000. Thus

$$log\ 19{,}960{,}000 = 7{\cdot}3002$$
$$7{\cdot}3002 \div 5 = 1{\cdot}4600.$$

The mantissa ·4600 corresponds with the antilogarithm ·2884, and, as the index 1 shows the answer to be between 10 and 100, the required root = 28·84.

Consequently by formula (65) the diameter of the pipe will be

$$0{\cdot}2 \times 28{\cdot}84 = 5{\cdot}768 \text{ in.}$$

The fractional difference between 5·608 in., as found by formula (64), is accounted for by the increase from 0·195 to 0·2 of the multiplier in the formula last employed.

Thus, if we multiply 28·84 by 0·1945, the diameter becomes

$$0{\cdot}1945 \times 28{\cdot}84 = 5{\cdot}608 \text{ as before.}$$

Formulæ (64) and (65) can be used in this way to obtain the required pipe diameter for any given discharge of steam per second or per minute, and by employing logarithms the process of calculation is rendered very simple and expeditious.

For setting out pipe systems with a minimum expenditure of time it is desirable to have a table for office use giving the discharge of steam in pounds per minute for pipes of different diameter. As the discharge varies with the length of the pipe and with the loss of pressure, as well as with the internal diameter of the pipe, the most convenient form for such a table is one based upon a pipe length and a pressure loss that lend themselves readily to the computation of discharges for other lengths and pressure losses.

If the table were calculated by formula (65) upon weights of steam discharge increasing progressively in predetermined units, the resulting pipe diameters would come out in fractional dimensions far more numerous than those available.

Therefore, it is better to calculate the table by formula (63) upon the pipe diameters adopted in practice, so as to obtain the weight of steam discharge corresponding with each of these. The adoption of this course makes the table shorter and does not impair its practical utility.

Table XXVII. has been thus calculated by formula (63) for pipes 100 ft. long and for a pressure loss of 1 lb. per square inch, the initial pressure being measured above vacuum, and not above the atmospheric pressure.

For any length of pipe other than 100 ft. the weight of steam discharged per minute will be

$$W_1 = W \sqrt{\frac{100}{l}} = \frac{W\,10}{\sqrt{l}}$$

For any loss of pressure other than 1 lb.

TABLE XXVII.—THE FLOW OF STEAM THROUGH PIPES CALCULATED IN POUNDS PER MINUTE FOR STRAIGHT SMOOTH PIPES 100 FT. LONG

Internal Diameter of Pipe in Inches.	Initial Absolute Steam Pressure* in Pounds per Square Inch.																
	1	10	15	20	25	30	35	40	45	50	60	70	80	90	100	125	150
	Steam Delivered in Pounds per Minute with a Loss of 1 lb. Pressure.																
¼	·00	·00	·00	·00	·00	·00	·01	·01	·01	·01	·01	·01	·01	·01	·01	·01	·02
⅜	·01	·03	·04	·04	·05	·05	·05	·06	·06	·06	·07	·07	·08	·08	·09	·10	·10
½	·03	·08	·10	·11	·13	·14	·15	·16	·17	·18	·19	·21	·22	·24	·25	·27	·30
¾	·06	·17	·21	·24	·27	·28	·30	·32	·35	·37	·40	·43	·46	·48	·51	·56	·61
⅞	·10	·30	·36	·42	·48	·50	·54	·58	·61	·64	·70	·75	·80	·84	·89	·98	1·07
1	·16	·48	·57	·69	·76	·80	·86	·91	·96	1·01	1·10	1·19	1·26	1·34	1·40	1·60	1·70
1¼	·24	·71	·88	·98	1·14	1·19	1·28	1·36	1·44	1·52	1·65	1·77	1·88	1·99	2·10	2·33	2·53
1½	·33	·97	1·18	1·35	1·50	1·64	1·76	1·87	1·98	2·08	2·26	2·43	2·60	2 74	2·88	3·20	3·50
1¾	·57	1·69	2·04	2·34	2·72	2·83	3·04	3·24	3·42	3·60	3·92	4·21	4·50	4·75	5·00	5·53	6·03
2	·90	2·68	3·25	3·72	4·32	4·50	4·84	5·15	5·45	5·72	6·23	6·70	7·14	7·54	7·92	8·80	9·60
2½	1·33	4·00	4·78	5·47	6·36	6·62	7·12	7·59	8·02	8·42	9·17	9·86	10·50	11·10	11·67	13·00	14·12
2½	1·85	5·56	6·67	7·63	8·88	9·24	9·93	10·58	11·18	11·75	12·80	13·77	14·65	15·49	16·28	18·08	19·70
2¾	2·49	7·40	9·00	10·25	11·92	12·41	13·34	14·21	15·03	15·78	17·18	18·50	19·69	20·81	21·87	24·29	26·46
3	3·24	9·63	11·66	13·35	15·52	16·16	17·36	18·50	19·56	20·55	22·37	24 06	25·62	27·09	28·48	31·61	34·44
3½	4·12	12·22	14·80	16·94	19·70	20·51	22·04	23·48	24·83	26·08	28·40	30·54	32·53	34·39	36·13	40·13	43·72
3½	5·12	15·19	18·38	21·06	24·47	25·48	27·38	29·20	30·85	32·40	35·30	37·95	40·41	42·72	44·90	49·85	54·32
3¾	6·25	18·56	22·47	25·72	29·91	31·14	33·46	35 65	37·70	39·60	43·11	46·37	49·38	52·21	54·87	60·93	66·51
3¾	7·52	22·33	27·03	30·95	36·00	37·50	40·26	42·90	45·36	47·64	51·88	55·80	59·42	62·82	66·02	73·30	79·88
3¾	8·93	2·54	32·12	36·78	42·76	44·52	47·84	50·97	53·86	56·61	61·64	66·30	70·60	74·64	78 45	87·10	95·0
4	10·57	31·20	37·76	43·52	50·26	52·34	56·24	59·92	63·36	66·54	72·46	77 93	83 00	87·74	92·22	102·39	111·57
4½	15·00	41·87	50·69	58·03	67·47	70·24	75·48	80·43	85·04	89·31	97·26	104·61	111·40	117·76	123·77	137·43	149·74
5	18·35	54·50	65·97	75·53	87·32	91·43	98·24	104·67	110·70	116·25	126·58	136·15	145·00	153·27	161·09	178·88	194·90
5½	23·28	69·16	83·72	95·85	111·43	116·03	124·67	132·84	140·45	147·52	160·63	172·77	184·00	194·50	204·42	227·00	247·34
6	28 93	85·94	104·05	119·12	138·50	144·20	154·94	165·05	174·55	183·33	199·63	214·73	228·65	241·71	254·05	282·10	307·35
7	42·55	126·40	153·00	175·18	203·65	212·05	227·84	242·75	256·74	269·60	293·57	315·76	336·29	355·49	373·61	414·82	452·02
8	59·41	176·48	213·60	244·57	284·35	296·08	318·10	338·93	358·40	376·40	409·90	440·85	469·50	496·34	521·65	579·23	631·10
9	79·75	236·90	286·70	328·31	381·70	397·45	427·07	455·00	481·20	505·35	550·30	591·85	630·30	666·33	700·29	777·60	847·20
10	103·77	308·30	373·15	427·24	496·70	517·20	555·70	592·15	626·15	657·60	716·08	770·13	820·20	867·10	911 57	1011·90	1102·55
11	131·70	391·24	478·44	542·22	630·38	656·20	705·28	751·40	794·70	834·60	908·80	977·41	1040·80	1103·50	1156·50	1284·15	1399·20
12	163·70	486·30	588·65	674·00	783·60	815·90	876·70	934·00	987·80	1037·30	1129·50	1215·00	1293 80	1367·70	1437·50	1596·25	1739·30

* In using this table 15 lb. per square inch must be added to readings from a pressure gauge on which atmospheric pressure = 0.

per square inch the weight of steam discharged per minute will be

$$W_1 = W\sqrt{(p_1 - p_2)}$$

For any length of pipe and loss of pressure other than 100 ft. and 1 lb. per square inch respectively the weight of steam discharged per minute will be

$$W_1 = \frac{W\ 10\ \sqrt{(p_1 - p_2)}}{\sqrt{l}}$$

Where W_1 = the required discharge of steam, W = the discharge according to Table XXVII., l = the other given length, and $(p_1 - p_2)$ = the other given loss of pressure.

Example (31).—Find the weight of steam discharged per minute by a 3-in. diameter pipe, 100 ft. long, with a drop of pressure from 60 lb. per square inch to 59 lb. per square inch.

By Table XXVII. the discharge for a 3-in. pipe, 100 ft. long, with 60 lb. steam is 35·30 lb.

The required discharge will be

$$W_1 = \frac{35{\cdot}3 \times 10}{\sqrt{400}} = 17{\cdot}6 \text{ lb.}$$

Example (32).—Find the weight of steam discharged per minute by a 3-in. diameter pipe, 400 ft. long, with a drop of pressure from 60 lb. per square inch to 56 lb. per square inch.

The required discharge will be

$$W_1 = 35{\cdot}3 \times \sqrt{4} = 70{\cdot}6 \text{ lb.}$$

Example (33).—Find the weight of steam discharged per minute by a 3-in. diameter pipe, 100 ft. long, with a drop of pressure from 60 lb. per square inch to 56 lb. per square inch.

The required discharge will be

$$W_1 = \frac{35{\cdot}3 \times 10 \times \sqrt{4}}{\sqrt{400}}$$

$$= \frac{706}{20} = 35{\cdot}3 \text{ lb.}$$

The last example shows that increase of length does not necessarily reduce the discharge, although the greater friction developed eats up more pressure. Sometimes this effect does not matter, and at other times it may interfere with the proper performance of the duty assigned to some important mechanical appliance, such as a pulsometer pump requiring a minimum head of steam for a given lift, or an ironing machine requiring a given temperature in the steam-heated bed or roller.

The pipe diameters in the first column of Table XXVII. are those adopted in the Report on "British Standard Pipe Threads," by the Engineering Standards Committee up to 12 in. diameter. We must point out, however, that the internal diameters here employed correspond with the "nominal" bores of the tubes, and are not the "commercial" diameters to which wrought-iron tubes are actually made.

Up to the present time no attempt has been made in this country to formulate a standard internal diameter for steam pipes of any kind. This is unfortunate, because the existing condition of chaos is apt to cause confusion. When wrought or cast iron pipes are ordered of a given size there is no saying what the actual diameter will really be, unless the architect or engineer has previously ascertained the "commercial" diameters adopted by some particular firm, and has specified that no other make of pipes shall be employed.

In their Report on "British Standard Pipe Threads," the Engineering Standards Committee have selected certain "nominal" bores up to 18 in., and for each of these have defined the "approximate outside diameter of black tube." But that is all. The leading makers have not yet adopted the dimensions nor the standard pipe threads, although we are informed that some of them will do so as soon as the standard gauges are ready. Even the adoption of these will not give uniformity, because the thickness of metal remains to be standardised.

We originally intended to calculate Table XXVII. upon standard internal diameters, but, finding no basis of the kind had been agreed upon, we have thought it better to base the table upon actual diameters which have a definite meaning, rather than upon an approximation to the average "commercial" diameters adopted by various manufacturers.

The only effect of applying Table XXVII. to pipes of "nominal bore" is to conduce to the use of larger pipes in the smaller sizes than might be employed if the "commercial diameters" had formed the basis of computation.

There are practical reasons for regarding this result with equanimity. In the first place, as the excess of "commercial" over "nominal" bore is inversely proportional to the diameter, the cost involved in the employment of tubing one size larger than may be absolutely necessary is scarcely worth consideration. Then the smaller the pipe the greater is the loss of heat by radiation and convection; therefore the greater the condensation and consequent corrosion. As the smaller pipes of a system are not usually so adequately protected by non-conducting material as the larger pipes, the condensation of steam is increased by this cause also, and it is important to remember that small pipes are far more apt to become choked than large pipes.

For these reasons it is not of vital importance to know whether, in some cases, a ¾-in. pipe might be substituted for one of ½-in. diameter, or a 1-in. for a 1¼-in. pipe. The larger size will certainly give increased efficiency, and the smaller size must as certainly reduce efficiency and at times may be distinctly inadvisable.

OBITUARY.

MR. H. H. ARMSTEAD, R.A.—We regret to announce the death on December 4, at his residence, No. 52, Circus-road, St. John's Wood, N.W., of Mr. Henry Hugh Armstead, R.A., in his seventy-eighth year. Mr. Armstead began his career as a pupil of E. H. Bailey, R.A., and at first devoted himself to working in bronze and silver for decorative objects. He was elected an Associate of the Royal Academy in 1875, and full Academician in 1879; in May last he was elected an honorary member of the Society of British Sculptors; he was an examiner of the Schools of Art, South Kensington; he was appointed a member of the Fine Arts Committee, Royal Commission, for the Paris Exhibition, 1900, and two years ago was appointed a member of the Jury of Award in the competition for the monument at Berne to commemorate the foundation of the Universal Postal Union. Of Mr. Armstead's works we have illustrated the memorial in the Royal Courts of Justice to G. E. Street, for which he executed the seated figure, and the figures in relief of an architect, a sculptor, and craftsmen at work, the general architectural design being by Sir A. W. Blomfield (July 3, 1886); the effigy for the monument to Bishop Olivant in Llandaff Cathedral (June 25, 1887); the figures for the reredos, St. Mary's Church, Aberavon (May 31—St. John—and August 23, 1890); "Maidenhood," a bust (July 18, 1885,* from a sketch by the artist); recumbent effigy for the Dean Close memorial (May 23, 1885*); "Ladas, the Spartan Runner, Dying at the Goal" (May 7, 1887*); "The Guardian Angel," a group in relief (May 31, 1890*); sculpture for the Julius Beer family mausoleum in Highgate cemetery (May 18, 1878); and "Remorse" (July 11, 1903*), a small-scale female figure in marble which was purchased by the Chantrey Bequest trustees and was deposited in the Tate Gallery, Millbank. For the Albert Memorial in Kensington Gardens Mr. Armstead executed the figures of poets and musicians on the south front and of painters on the east front of the base of the great canopy; and, in conjunction with Philip, he contributed the bronze symbolical statues of Astronomy, Chemistry, Geology, and Geometry upon the pillars, with those of Rhetoric, Medicine, Philosophy, and Physiology in the niches above the capitals. In conjunction with Sir E. J. Poynter, P.R.A., he executed a portion of the frieze, Royal Albert Hall, 1870. Of his works in decorative metal we may mention the Tennyson vase, for which he gained a medal at the Paris Exhibition in 1885; the Outram shield, now in the Victoria and Albert Museum; and the testimonial which was presented to Charles Kean. His other principal works include two bas-reliefs in marble at the west end of the Guards' Chapel, Wellington barracks; allegorical figures to represent "London" in the sculptured spandrels over the principal entrance of the Hotel Métropole, Northumberland-avenue; the reliefs of Europe, Asia, Africa, America, Australasia, and Education for the Colonial Office, Whitehall; the fountain for King's College, Cambridge; statues of Bishop Wilberforce and, at Chatham, of Lieutenant Waghorn, the founder of the Overland Route, 1889*; the Fred Walker memorial in Cookham church; a marble bust of Queen Victoria for the Guildhall, Exeter (1888); a bust in alto-relievo of the late Prebendary Webb for his monument in St. Paul's (1889*); a bronze por-

trait medallion of the late G. Price Boyce, R.W.S. (1889*); his modelled portrait of Miss Lottie Armstead, and bronze portrait-medallions of Mrs. Craik, for Tewkesbury Abbey (1889*); and "Frau F. Nissen (1899*); at Westminster Abbey, the bust of Archbishop Tait and the carved cornice in the cænaculo, with the statues of Moses, SS. Peter and Paul, and King David for Scott's altar-piece in mosaic, completed in 1866, Westminster Abbey; the figures of the Prophets in the medallions in the spandrels of the nave arches, Holy Trinity Church, Sloane-street, S.W.; the reredos, about forty years ago, for the church of St. Mary-the-Great, Cambridge; and three years ago he was commissioned by a committee of native gentlemen to execute a marble bust of Sir Henry Cotton for Calcutta Town Hall. We may add that Mr. Armstead married a daughter of the late Mr. H. T. Wells, R.A., and that his bust-portrait, by Mr. W. R. Colton, A.R.A., was exhibited in the Royal Academy rooms in 1903. The works by Mr. Armstead which we mark with an asterisk were exhibited in the Royal Academy in the years respectively cited.

MR. MILLS.—The death, at a greatly advanced age, on November 22, is announced of Mr. Alexander William Mills, formerly of Manchester, and latterly of Green-walk, Bowdon, Cheshire. Mr. Mills was elected a Fellow of the Royal Institute of British Architects in 1877; he was one of the original members of the Manchester Society of Architects, and was President of that Society in 1869-71. With his former partner the late Mr. James Murgatroyd, who became a member of the firm of Messrs. Mills & Murgatroyd, of Strutt-street, Manchester, architects and surveyors, fifty years ago, he practised during thirty years in Manchester, and then relinquished the active pursuit of his profession. After a competition held in 1838 Mr. Mills was appointed architect for carrying out an extension of the old Exchange building at Penniless-hill, Manchester (by Harrison, of Chester, 1806-9), and for its further enlargement in 1844-5. In the competition for the rebuilding upon the greatly increased site, more than 5,000 sq. yards, of the Royal Exchange in terms of the proprietary company's Manchester Royal Exchange Act, 1868, Messrs. Mills & Murgatroyd won the first (500 guineas) and second premiums respectively. Illustrations of the later structure are published in the *Builder* of October 29, 1870; January 7, 1871; and November 7, 1896. The great room, with aisles, covering 4,050 yds. superficial, is reputedly the largest covered area in Europe devoted to mercantile purposes. In our number of September 24, 1881, we illustrated the firm's designs for the Manchester High School for Girls in Dover-street, Chorlton-on-Medlock, to which they added another chemical laboratory, a lecture-room, and a gymnasium five years afterwards; on March 25 of the current year we published illustrations of the interior, and of the firm's further improvements of the high school, which embrace a cookery school and a biological laboratory on the first and upper floors, respectively, of the south-west wing, the school kitchen, etc., on the ground-floor and so on. Some other architectural works by Mr. Mills in Manchester and the suburbs, comprise the Grand Hotel (formerly a warehouse), the workhouses at Crumpsall and in New Bridge-street, and, we understand, the railway station in London-road. Mr. Mills was a magistrate for the county of Chester.

MR. WELLER.—The death is announced also, at his residence, No. 187, Tettenhall-road, Wolverhampton, of Mr. John Weller, senior member of the firm of Messrs. John Weller & Sons, of King-street, Wolverhampton, architects and surveyors. The firm prepared the plans and designs of St. Jude's Vicarage, erected six years ago near St. Jude's Church in Tettenhall-road, at a cost of 2,200*l.*, and, for Lord Dartmouth, of the hall and institute at Burnhill Green, near Patshull, Staffordshire, to serve as a memorial of the late Earl and Countess of Dartmouth, and as a place of recreation and entertainment for those who live on and around the Patshull estate. The hall accommodates 200 persons, exclusively of the platform and gallery. Mr. Weller designed many residences and buildings in Wolverhampton and the country around, and was architect and surveyor to the Wolverhampton and District Permanent Building Society.

STAINED GLASS AND DECORATION.

REREDOS, LLANBADOC CHURCH, NEAR USK.—A new reredos in St. Madoc's Church, Llanbadoc, has just been completed by the erection of six statues representing St. George, St. David, St. Andrew, and St. Patrick, St. Dubricius, and St. Madoc. The work is constructed in Bridgend stone in Late Decorated style, consisting of seven canopied niches, the central one, larger than the others, containing a representation of the Crucifixion in *alto relievo*, and the remaining niches the figures of the saints already named. Messrs. Veall & Sant, architects, were responsible for the design, and Mr. Wormleighton was the sculptor.

GENERAL BUILDING NEWS.

ST. BARTHOLOMEW, SMITHFIELD.—The reopening of the restored cloister of St. Bartholomew the Great, West Smithfield, on Saturday last week, by the Bishop of London, practically completes the work that has been going on there for twenty years. Under the late Rector, the Rev. W. Panckridge, an effort was made to initiate a scheme of renovation and restoration. At that time—1885—the portion of the church used for Divine service was in a dilapidated condition, while a forge, a factory, and a school occupied various parts of the building, and what was left of the cloister had been utilised as a stable. The sanctuary and lady chapel, the north transept and the triforium have been restored to their original uses, and now the remains of the cloister have been reconstructed and roofed and the entrance to the church opened up. It is proposed, when funds permit, to build rooms over the cloister, as in monastic times, for the use of the clergy and mission workers. Sir Aston Webb, R.A., has been the architect throughout.

CHURCH, DERBY.—The Bishop of Southwell on Saturday last week consecrated the newly-erected Church of St. Osmund at Osmaston-by-Derby. The church consists of a nave and chancel under one roof, 110 ft. in length and 25 ft. wide, with north and south aisles and porches, an organ chamber on the north side of the chancel, and a south chancel aisle arranged for use for daily services. The nave and chancel are 55 ft. high to the ridge of the roof. The vestries have yet to be built, but a temporary vestry is provided beneath the organ gallery. The church will accommodate upwards of 480 persons. Owing to the low level of the site, the floor of the church has been fixed some 4 ft. above the original ground level, which has been filled in all round. The foundations were carried down to a bed of gravel, and the walls, carried upon a series of piers and arches, are constructed of Portland cement concrete, faced both outside and in with small sand-stock bricks. Dressings of Matlock stone have been used. The clearstory walls are carried on brick arches, supported by columns of buff terra-cotta, and the roofs are of pitch-pine, covered with brown slates from South Wales. A small bell turret of oak, covered with lead and oak shingles, is fixed on the ridge of the roof. The floors under the seats are of wood blocks, and the passages paved with Woolliscroft's buff quarries; the sanctuary is paved with Hopton stone and grey slate in large squares, and the side chapel is covered with a groined roof of brick and stone. The altar is of oak, with a slab of Derbyshire fossil marble forming the table; behind it is a reredos of alabaster, with a large Egyptian onyx cross set in a background of glass mosaic. Only two of the permanent choir seats are yet fixed, the remainder waiting, as are the chancel screen and pulpit, for further funds. The church is warmed by hot water. The contractors for the whole of the work are Messrs. R. Weston & Son, Derby, and the architects were Messrs. Currey & Thompson, Derby.

EXTENSION OF WESLEYAN METHODIST CHURCH PREMISES, IPSWICH.—The memorial-stones were recently laid of the extension which is being made to the Sunday-school of the Alan-road Wesleyan Methodist Church. The alterations comprise the addition of a new school with a central hall and several classrooms; also the pulling down of the old gallery in the church, and the erection of a new one with side balconies. The work will cost about 3,000*l.*, the contractors being Messrs. Theobald & Sons, Needham Market, and the architects Messrs. Eade & Johns.

SAVINGS BANK PREMISES, ROTHESAY.—On the 28th ult. the new premises of the Bute Savings Bank, at Rothesay, were opened. Some time ago the trustees acquired a property in Castle-street, the lower flat of which was gutted out in order that office accommodation might be provided. The flat has been divided into a public office and board-room, and a strong room has been provided; also lavatory and dressing-roomaccommodation. The architect was Mr. A. M. Mackinlay.

PUBLIC LIBRARY, RUSHDEN.—A new free library has been opened at Rushden. The new building comprises news-room, magazine-room, ladies' reading-room, lending library, reference library, librarian's-room, book store, and lavatories. The building shows a classical front, treated in a very suitable and satisfactory manner. A vestibule leads to the central hall, from which all the rooms open. The hall is rectangular in shape, and the flooring is of terrazzo. Immediately facing the entrance is the lending library, which is designed upon the open access system, the librarian's counter and screen dividing it from the hall. In the library oak book stacks are provided, capable of holding 6,500 volumes. To the left of this room, and divided from it by a glazed screen with access door, is the reference library. To the right and left of the entrance hall and in the front part of the building are the magazine and news-rooms, each entered from the central hall by glazed double swing doors. Immediately adjoining the magazine-room and divided by a glazed screen with access door is the librarian's office. To the left of the central hall, and between the news-room and reference library, is a separate ladies' reading-room. All the rooms are 13 ft. high, and have pitch-pine wood block floors. From the central hall a corridor to the right leads to a store-room and lavatories, and to a side entrance. The heating chamber is in the basement under the store-room and has a fireproof ceiling. The building is heated by hot water on the low-pressure system. The principal contractor has been Mr. Wm. Packwood, the sub-contractors being:—Messrs. Whittington & Tomlin for the carpenter and joiner's work; Mr. T. Higgins (of Wellingborough) the stone mason's work; Mr. Walker for plastering; and Messrs. A. T. Nichols & Co. plumber, glazier, and painter's work. The carving was executed by Mr. M. White, of Peterborough, and the wrought-iron fence by Mr. Reynolds, of Harrowden. The gas fittings were supplied by the Rushden and Higham Ferrers Gas Company. The heating was by Messrs. Dargue, Griffiths, & Co., of Liverpool; the wood block flooring, Roman mosaic and terrazzo paving was by Mr. Jos. Ebner, of London. The architect has been Mr. W. B. Madin, the Town Surveyor.

FOREIGN.

FRANCE.—M. François Flameng has been elected at the Ecole des Beaux-Arts, in place of Bouguereau, by 19 out of 35 votes. The new Academician is a son of the engraver Léopold Flameng (himself a member of the Institut), and was born in 1856. He studied engraving under his father and under Hédouin, and painting in the ateliers of Cabanel and J. Paul Laurens. In 1879 he obtained the Salon Medal of Honour for his picture, "The Appeal of the Girondins"; and he painted subsequently several scenes from the Revolution. He has executed also an important decorative picture for the Sorbonne. He has had much success also as a portrait painter.——The Municipal Council of Montataire has voted a sum of 120,000 francs for new school buildings.——M. Bouillard has been commissioned to prepare plans for a new Ecole Maternelle at Falaise (Calvados).——A new firemen's barracks is to be built at Roubaix, on the site of the former Academy of Music.——A monumental bridge, 65 mètres in length, is to be built at Calais over the ditch of the fortifications facing the sea. The cost of this bridge, which is to connect the centre of the town with the Casino promenade, will be 325,000 francs.——M. Mayer, architect, of Chartres, has been commissioned to carry out a large group of school buildings there.——The Municipality of Valenciennes have voted a sum of 2,300,000 francs for various operations of street improvement and building; among others the enlargement of the public library, the construction of a viaduct at St. Vaast, and the improvement of the water supply.——The celebrated château of Plessis-les-Tours, the favourite abode of Louis XI., is about to be the object of a restoration which, preserving the exterior architectural character of the building, will allow of the restoration of some of the historic chambers of the interior.——The death is announced of M. Baustart, the oldest architect in the department of Seine-et-Marne, at the age of eighty-one. He was a pupil of Labrouste, and had been settled since 1854 at Melun, where he had carried out numerous town and country houses.

THE "RED HOUSE" AT PORT-AU-SPAIN.—Sir H. M. Jackson, Governor of Trinidad, has informed the Colonial Office that the restoration of the public buildings formerly known as the Red House was proceeded with during the year 1904-5, and the structural works nearly completed. The new building is considerably larger than the old, a spacious legislative council chamber and new offices being provided at the northern extremity; while two handsome and airy law courts have been added at the southern end. In the centre a lofty dome, surmounted by a cupola, covers in the open quadrangle. The building, which will be perhaps the finest structure in the West Indies, will probably be completed and ready for occupation in 1906.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—It has been found desirable, under the terms of the late Mr. Alfred Waterhouse's will, to dispose of the lease of the well-known house at No. 20, New Cavendish-street, where Mr. Waterhouse for so many years had his town residence and his offices combined. Mr. Paul Waterhouse has therefore transferred his offices to rooms in Staple Inn-buildings, Holborn Bars, at which address his work will be conducted on and after the 18th inst. The telegraphic address will be, as before "Ædilis, London," and Mr. Waterhouse's new telephone number is 2,399 Holborn.——Messrs. W. & J. R. Freeman, stone and granite merchants, have removed from 57, Millbank-street to Great College-street, Westminster.

BOROUGH POLYTECHNIC INSTITUTE.—The Report of this Institute, presented by the Principal (Mr. C. T. Millis) at the Annual Meeting on the 4th inst., states that the percentage of passes gained in examinations was higher than last year, and the total value of scholarships was

375*l*. Certificates were gained in carpentry and joinery, building construction, builders' quantities, plumbers' work and brickwork. Two full technological certificates in plumbers' work were awarded, and successes were recorded in applied mechanics, practical mathematics, magnetism and electricity, etc. Co-ordination with the London County Council evening schools is being experimented in, and several new classes have been started. A satisfactory feature of the work is the readiness with which intending students ask for and follow advice given as to their courses of study, and the increasing number of students who attend for two, three, and four years.

SCARBOROUGH MASTER BUILDERS.—The annual meeting of the Scarborough Master Builders' Association was held at the Albemarle Hotel recently, Mr. A. W. Sinclair (President) being in the chair. The annual report and balance-sheet of the Association were read by Mr. Hardgrave, and were considered satisfactory, after which the election of officers for the ensuing year was proceeded with. It having been reported at a previous meeting that Mr. Sinclair did not desire to be re-elected President, as he had held office for five years, a hearty vote of thanks was accorded to him for his services in the chair, for his services rendered to the Yorkshire Federation as their representative, and also for his services upon the Council of the National Federation. Mr. R. H. Carr, who had previously served seven years as secretary and two as vice-President, was unanimouly elected President. Mr. O. Smith was elected vice-President, Mr. F. Hardgrave was re-elected secretary and treasurer, and a committee was appointed.

GLASGOW ARCHITECTURAL CRAFTSMEN'S SOCIETY.—At the usual fortnightly meeting of this Society, held in the Technical College on the 1st inst., Prof. Gourlay presiding, Mr. John D. MacKenzie delivered a lecture on "Electricity as a Home Comfort." The deficiencies of ordinary methods adopted in electric-lighting installations were dwelt on at some length, accounted for, in the lecturer's opinion, by an undue conservatism and conventionality of ideas. The real objective, and one seldom attained in present-day work, was to get the light and conceal the source, or, in the lecturer's words, "obtain an effective unobtrusiveness." The adaptation of electricity to bells, heating, cooking, and general domestic use was explained and demonstrated with the most modern apparatus for its effective utilisation. The lecture was illustrated with many lantern views of electrical fittings for lighting, also special slides showing the different systems of wiring, and defects due to careless workmanship.

PROPOSED WHISTLER MEMORIAL.—It is stated that the proposed international memorial to the late J. M. Whistler will consist of a monument to be set up at Chelsea after a design by M. Auguste Rodin, who succeeded Whistler as President of the International Society of Sculptors, Painters, and Gravers. The Society contribute 500*l*. towards the estimated cost, 2,500*l*., of the memorial at Chelsea, and it is intended, if the necessary subscriptions are received, to erect replicas of M. Rodin's monument in Paris and in America. Mr. T. Stirling Lee, New Gallery, Regent-street, is honorary secretary to the memorial fund.

HOSTEL OF ST. LUKE, LONDON.—The executive committee have appointed Mr. Maxwell M. Smith as architect for the building of the new hostel, or Clergy Nursing Home, on the freehold site of No. 14, Fitzroy-square, St. Pancras, which until recently was the town house of Colonel Robert W. Edis. The hostel, founded in September, 1892, is now established at No. 16, Nottingham-place, Marylebone-road, and a building fund of 10,000*l*. is opened.

MUNICIPAL ART GALLERY, LEEDS.—Mr. S. Wilson, a well-known manufacturer of Leeds, has acquired for the Art Gallery the four large decorative panels, illustrative of Labour, which Mr. Brangwyn, A.R.A., recently contributed to the English Hall of the International Art Exhibition at Venice, and for which he was awarded a gold medal.

STANDARD FOR CEMENT.—At the meeting of Bermondsey Borough Council on Tuesday the Works Committee reported that the London County Council's specification for Portland cement was the standard adopted up to the present by the Borough Council. Some difficulty however had been found by the cement manufacturers in complying with the great variety of specifications in existence, the London County Council's test being only one of a large number. To obviate this difficulty, which exists not only with cement but in other branches of engineering manufactures, the Engineering Standards Committee had been appointed by the Institution of Civil Engineers and other societies, and had drawn up a specification and standard test for all articles of manufacture connected with the engineering and building trades, Portland cement being among the number. The London County Council, in common with most other public bodies, is now adopting this standard or specification, and the Borough Councils Committee recommended that in future contracts the Borough Council should specify the cement to be as per the British standard specification for Portland cement passed at the meeting of the Engineering Standards Committee on December 8, 1904. This was agreed to.

Legal.

THE WIDENING OF PICCADILLY.

THE hearing of the case of Notaras *v.* the Westminster City Council concluded in the Chancery Division, before Mr. Justice Swinfen Eady, on the 1st inst.

Mr. Montague Lush, K.C., and Mr. Ashton Cross appeared for the plaintiff; and Mr. Eve, K.C., and Mr. Methold for the defendants.

This was an action by the plaintiff, Mr. Michael Emanuel Notaras, a cigarette maker and merchant, carrying on business at No. 30, Piccadilly, for an injunction to restrain the defendants from acquiring the whole of his premises instead of such part only as was necessary for the widening of Piccadilly. Plaintiff also asked, in the event of its being held that defendants were entitled to take the whole of his property, for an injunction to restrain them from selling any part thereof to the Piccadilly Hotel (Ltd.) or any person before offering it to the plaintiff. The plaintiff alleged that as the Council only required 22½ ft. out of 65 ft., the total depth of plaintiff's building, to widen the street he could equally well carry on his business in the restricted area.

The plaintiff gave evidence to the effect that he found it impossible to get other suitable premises for his business in the immediate neighbourhood. The premises would be better when reduced, as the new front would be wider. His turn-over from sales was 8,000*l*. a year. He paid duty to the extent of 1,600*l*. a year for tobacco purchased.

Mr. W. Scott, an architect, gave evidence as to the feasibility of carrying on the plaintiff's business during the operations, although he admitted that the necessary protection involved trespassing on other people's property.

Mr. Eve pointed out that there would be no access to the plaintiff's premises as he only occupied the ground floor, and had not control over the basement or upper story.

Mr. Trollope, a surveyor and estate agent, gave evidence to the effect that there was no difficulty in the plaintiff remaining where he was during the carrying out of the improvement.

Mr. Eve said that if all the owners took this attitude no improvement could be effected. The plaintiff's lease had only 2½ years to run.

At the close of the plaintiff's case Mr. Eve, on behalf of the defendant Council, submitted that it was absolutely impossible to carry out the improvement if the Council were to take only the ground which would ultimately be thrown into the street.

Mr. Howard Martin, a building surveyor, examined, said that the improvement would take two years to carry out. It would be impossible to carry out the improvement if defendants were only entitled to take the ground which would ultimately have to be thrown into the street.

Cross-examined by Mr. Lush,

Structurally there is no difficulty in rebuilding if plaintiff's premises remain?—Of course there is no difficulty in doing anything if you have money enough and are foolish enough to do it.

Mr. Andrew Young, valuer for the London County Council, was also of opinion that the improvement could not be effected unless the whole of the plaintiff's premises were acquired.

Cross-examined,

The supports for pulling down the building would block up the plaintiff's entrance; people would have to squeeze through.

Mr. Alexander Stenning also gave corroborative evidence.

Mr. Lush, in summing-up the case on behalf of the plaintiff, contended that the widening was a *bona-fide* scheme, but it would not have been effected unless simultaneously and as part of the scheme the defendants had arranged to sell the surplus land to the hotel company. The Council were to pay 80,000*l*. for the strip of land. He submitted that the agreement with the Hotel Syndicate settled the fate of the plaintiff's premises, and prevented the Corporation from acting in an unprejudiced and judicial manner. The plaintiff could be dispossessed without trouble at the end of his lease, and all he asked was to be undisturbed for that period.

His lordship, in giving judgment, said that the right of pre-emption was obviously of no value to the plaintiff. In his opinion the improvement could only be carried out by acquiring the whole of the plaintiff's property, and that the defendant's action was not vitiated by the agreement to re-sell land to the hotel company. He arrived at the same conclusion as in the case of the adjoining property, that it was physically impossible to pull down only the front portion of the premises. He thought the defendants' was a reasonable and necessary requisition, and he dismissed the plaintiff's action with costs.

Order accordingly.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

21,555 of 1904.—B. A. SPAULL and E. J. HALL: *Portable Scaffolding or Scaffolds.*

This relates to a portable and adjustable scaffold, and consists in the combination with a ladder, of the adjustable frame, brake, or clamp, lifting gear, or its equivalent, automatic lock or stop, side shifting tackle, and a platform, which can be raised or lowered by workmen standing on the same.

24,449 of 1904.—D. M. NESBIT and ASHWELL & NESBIT, LTD.: *Radiators for Heating Buildings, and the like.*

This relates to the mounting of a radiator or the like upon trunnions, so as to enable the same to be raised or lowered to facilitate access to the rear thereof without interfering with the steam or water connexions.

24,784 of 1904.—N. COULAND: *Apparatus for Opening and Closing Sliding Doors.*

This relates to an apparatus for opening and closing sliding doors, and is characterised by a telescopic device connecting two double sliding doors with a double central sliding door, in such a manner that after the opening of this central door it is possible to open the two extreme doors, whilst on closing the central door the two extreme doors are closed at the same time.

25,244 of 1904.—C. HORSMAN: *Single Toothed Gauges and Mortise Gauges for use by Carpenters and other Workers in Wood.*

This relates to the construction of single tooth gauges and of double tooth gauges for use by carpenters to gauge up a piece of wood to a parallel width by means of the single tooth gauge or to gauge mark the double boundary lines of a mortise, and consists of a square stem or a round stem, and also a stem block, which is pierced with a round or other shaped stem hole to suit the shape of the stem used with the stem block.

26,939 of 1904.—PLANET FOUNDRY CO., LTD. and G. F. CALDERWOOD: *Gas Fires for Grates, Stoves, and the like.*

This relates to a grate stove or the like, and consists of a barless grate or cradle-like holder, fixed or adjustable, artificial fuel therein, and multiple gas burners beneath the holder, and adapted to project on series of ends, gas flames into the fuel.

27,687 of 1904.—R. E. ATKINSON: *Valves and Regulators for use upon Heating Systems.*

This relates to a steam-heating system, and consists in automatically controlling the supply of steam to each radiator by a thermostatic valve, influenced by the prevalent heat in or close to the radiator, and by a diaphragm valve, the differential pressure on which is controlled by a thermostat influenced by the prevalent heat in the room or chamber in which the radiator is situated.

27,777 of 1904.—R. E. ATKINSON: *Heating Apparatus.*

This relates to a vacuum system of steam-heating or other like apparatus heated by steam, and consists in controlling the supply of steam by a diaphragm valve on the supply main or pipe, the diaphragm of the valve being under the influence of the pressure existing in the return or exhaust main or pipe.

4,004 of 1905.—T. N. ROBINSON: *Machines for Planing and Moulding Wood.*

This relates to a machine for planing and moulding wood, and consists of a friction pulley mounted loosely upon a shaft in combination with a friction disc, arranged to be moved along its shaft towards or from the centre of the friction pulley, and means for driving the feed rollers from the shaft or the friction disc.

10,348 of 1905.—C. J. FOOKS: *Casement Fasteners.*

This relates to casement fasteners, and consists in the combination and arrangement of a movable body with a pin, said pin revolving loosely in a hole of a back plate, and riveted over to form a head. The back plate is provided with two countersunk screw holes for fixing the said back plate to the window sash.

10,838 of 1905.—M. RATH: *Double Paned Windows.*

This relates to a double paned window, and consists in the arrangement of the window frame, which is formed with channels connecting the space between the panes and the outer air, and wadding plugs, gauze or sieves in the ventilating channels.

13,454 of 1905.—S. J. ROSENFELD: *Combined Wash-bowls and Water Receptacles.*

This relates to a wash-bowl, and comprises an inner and an outer wall of flexible material, the space between such walls constituting a water

* All these applications are in the stage when opposition to the grant of Patents upon them can be made.

receptacle, a stoppered opening being provided in the inner wall for the passage of the water.

19,726 of 1905.—J. R. WILLIAMS: *Metal Sheet Piling.*

This relates to a metal sheet piling, composed of individual sections lapping upon each other and locked together so that they cannot be pulled apart in a horizontal direction, and is characterised by each section being in one integral metal plate, having a transverse member and parallel members extending laterally in opposite directions from the edges of said transverse member, and being about equal in extent, whereby said sections may be alternately faced in opposite directions with the adjacent lateral members of the respective sections in face to face contact, and forming a double layer, and is also characterised by each section having locking means to receive the adjacent edges of the lateral members of the adjoining sections, whereby each section becomes locked to each adjoining section at two points.

1,021 of 1905.—E. GIULIETTI: *Stages and the like for Theatres and in Arrangements for Operating the same.*

This relates to theatres, and consists in the arrangement of several movable superposed stages provided with raising and lowering means whereby anyone of the same can be brought on to a level with the fore-scene to serve as a stage on which the actors play, whilst the stage which is immediately over the one on a level with the fore-scene rises to a suitable height, and so forms the curtains or decorations of the ceiling.

5,018 of 1905.—W. ELLIS: *An Adjustable Cap and Washer for Connecting Outlet Pipes to Flushing Cisterns or other Vessels without Screwing or Soldering.*

This relates to a telescopic and adjustable joint for flushing cisterns and similar vessels, and consists in the combination of a cap having a rubber or suitable ring or washer, with a flushing pipe, the end of said pipe being telescoped into the siphon pipe of the cistern, and held at any required height within the length of the siphon pipe, when the cap with its rubber washer is screwed up tight.

5,527 of 1905.—W. H. BODIN: *Means for Securing Grids or Covers on Drain Gulleys, Sewer Manholes, and the like.*

This relates to means for securing the grid or cover on a drain gulley, sewer manhole, or the like, and consists of two dove-tailed projections on the underside of the grid or cover, and at opposite sides of the same, engaging with undercut recesses in the drain gulley, sewer manhole, or the like, one of the said projections being so mounted and arranged in the grid or cover as to be capable of being turned by a key to lock or unlock the grid or cover.

17,486 of 1905.—J. MOHS and G. NICOLL: *Flushing Apparatus for Water-closets.*

This relates to a flushing apparatus for water-closets, consisting of a standard, a leading valve, and a discharging valve, both arranged in a governing chamber, a cock for regulating the flushing duration, branch tubes for connecting the apparatus with the water conduit, and feeding the governor chamber, an inner tube, a movable middle tube, and an outer tube forming part of said standard and lever for operating the apparatus.

TERMS OF SUBSCRIPTION.

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SOME RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

Nov. 23.—By BALLARD & MARSH (at Twickenham).

Twickenham, Middlesex.—Radnor-rd., "Radnor Lodge," f., y.r. 40*l.*	£560
1 and 6, Radnor-rd., u.t. 97½ yrs., g.r. 14*l.* 14s., y.r. 80*l.*	815
1 and 3, Grosvenor-rd., f., y.r. 60*l.*	655
Teddington.—1 and 2, Hampshire-villas, f., w.r. 44*l.* 12s.	615
Fulwell-rd., a freehold building site	240

Nov. 24.—By HARRY BULL (at Bedford).

Bedford.—26, Grove-pl., f.	330
53 and 55, Westbourne-rd., f., w.r. 27*l.* 6s.	320
46 and 48, Chaucer-rd., f., y.r. 90*l.*	855

Nov. 27.—By ELLIOTT, SON, & BOYTON.

Soho.—37 and 38, Frith-st. (s.), f., y.r. 125*l.*	3,700
Regent's Park.—33, Chester-ter., u.t. 9½ yrs., g.r. 52*l.* 10s., y.r. 225*l.*	1,060
Kentish Town.—16, 18, and 20, Rochford-st., u.t. 59½ yrs., g.r. 15*l.*, y.r. 127*l.*	790
Yarmouth, Isle of Wight.—Newport-rd., f.g.r. 15*l.*, reversion in 957 yrs.	360
Camberwell.—89 and 91, Avenue-rd., u.t. 45½ yrs., g.r. 16*l.*, w.r. 72*l.* 16s.	400
By HEDGER & MIXER.	
Notting Hill.—6, Kelfield-gdns., u.t. 80½ yrs., g.r. 12*l.*, e.r. 100*l.*	£700
By KEMSLEYS'.	
Walthamstow.—62 to 68 (even), Cavendish-rd., f., w.r. 93*l.* 12s.	700
63 to 71 (odd), Selwyn-av., f., w.r. 117*l.*	875
Elm-gr., f.g.r. 10*l.* 10s., reversion in 93 yrs.	255
5, 7, and 9, Elm-gr., f., w.r. 58*l.* 10s.	500
48 to 54 (even), Chingford-la. (s.), f., y.r. 109*l.* 4s.	1,150
Woodford Green, Essex.—1 and 2, Bourne-cottages, f., w.r. 33*l.* 16s.	360
By MOSS & JAMESON.	
Chelsea.—62, Oakley-st., u.t. 52½ yrs., g.r. 10*l.*, y.r. 65*l.*	680
Enfield.—2, Rayleigh-rd., f., w.r. 20*l.* 16s.	330
By SKILTON & GOULDEN.	
Lewisham.—High-st., "Mount Granville," u.t. 27 yrs., g.r. 10*l.* 1s., p.	820
By F. VARLEY & SON.	
Holloway.—Anson-rd., "Broadlands," u.t. 64 yrs., g.r. 36*l.*, e.r. 70*l.*	155
November 28.—By H. J. BROMLEY.	
Herne Hill.—158, Mayall-rd., u.t. 63 yrs., g.r. 6*l.* 6s., e.r. 90*l.*	675
By BROWETT & TAYLOR.	
Battersea.—Howey-st., f.g. rents 15*l.*, reversion in 60 yrs.	374
Highgate.—Brunswick-rd., f.g.r. 12*l.*, reversion in 38½ yrs.	370
Highbury.—Avenell-rd., etc., f.g.r. 18*l.*, reversion in 72 yrs.	480
Stratford.—High-st., etc., f.g.r. 35*l.*, reversion in 46 yrs.	750
Bethnal Green.—Whiston-st., etc., f.g.r. 15*l.*, reversion in 21½ yrs.	405
By NORRIS & HADLEY.	
Hackney.—6 and 7, Sidworth-st., u.t. 66 yrs., g.r. 11*l.*, w.r. 70*l.* 14s.	500
By VENTOM, BULL, & COOPER.	
Hackney.—20, 21, 22, and 23, Ada-pl., f., w.r. 114*l.* 8s.	780
By SEDGWICK, SON, & WRALL (at Watford).	
Watford, Herts.—26, St. Alban's-rd., f., e.r. 110*l.*	730
1 to 17 (odd), Butcher's-yard, also yard and stabling adjoining, f.	525
64, Pinner-rd., f., w.r. 16*l.* 18s.	220
Pinner-rd., eleven freehold building plots	780
By W. H. HANSON (at Gainsborough).	
Stow, Lincs.—Freehold farmhouse and 72 a. 3 r. 36 p.	2,350
November 29.—By FIELD & SONS.	
Bermondsey.—50, Maltby-st., and 58, Stanworth-st., u.t. 7 yrs., g.r. 6*l.*, y.r. 58*l.*	145
By HUGHESDON & HINDS.	
Shoreditch.—112, Weymouth-ter., f., e.r. 60*l.*	450
By REYNOLDS & EASON.	
Shoreditch.—107 and 108, High-st. (s.), u.t. 51 yrs., g.r. 165*l.*, e.r. 350*l.*	2,000
By R. TIDEY & SON.	
Dalston.—28, Mayfield-rd., u.t. 15½ yrs., g.r. 5*l.*, y.r. 34*l.*	125
Finsbury Park.—3, 7, 13, and 15, Ambler-rd., u.t. 65½ yrs., g.r. 25*l.* 4s., y.r. 138*l.*	1,455
Stroud Green.—57, Lancaster-rd., u.t. 71 yrs., g.r. 7*l.* 10s., y.r. 46*l.*	430
By T. B. WESTACOTT.	
Camden Town.—126 and 136, Great College-st. (s.), u.t. 36 yrs., g.r. 11*l.*, y.r. 100*l.*	800
Kentish Town.—55 and 57, Warden-rd., u.t. 53½ yrs., g.r. 14*l.*, y.r. 92*l.* 4s.	630
By DOUGLAS, YOUNG, & Co.	
Holborn.—4, 6, 8, and 10, Theobald's-rd. (Dartmouth-chambers), u.t. 52½ yrs., g.r. 100*l.*, y.r. 545*l.*	2,670
By WYATT & SON (at Chichester).	
Chichester, Sussex.—28 to 31, Cleveland-rd., f., w.r. 55*l.* 8s.	620
November 30.—By E. W. HARRIS.	
Brixton.—102, Loughborough-pk., u.t. 17 yrs., g.r. 6*l.*, y.r. 40*l.*	200
By HERRING, SON, & DAW.	
Balham.—64, Rosslter-rd., u.t. 68 yrs., g.r. 9*l.* 9s., y.r. 32*l.*	170
By NEWBON, EDWARDS, & SHEPHARD.	
Gray's Inn-road.—No. 244 (s.), u.t. 13½ yrs., g.r. 8*l.* 10s., y.r. 55*l.*	280
Barnsbury.—17, Cumberland-st., u.t. 50½ yrs., g.r. 7*l.*, y.r. 42*l.*	340
Willesden.—Vicarage-rd., f.g.r. 9*l.*, reversion in 74 yrs.	210
City-road.—115, East-rd. (s.), u.t. 42 yrs., g.r. 12*l.*, y.r. 60*l.*	500
By WM. STEVENS.	
Dalston.—59, Queen's-rd., and 62, Angrave-st., u.t. 33½ yrs., g.r. nil, y.r. 56*l.*	470
61, 64, 67, 69, 71, and 73, Queen's-rd. (s.), u.t. 32½ yrs., g.r. nil, y.r. 284*l.* (in lots)	2,165
7 and 8, Brownlow-st. (s.), u.t. 33½ yrs., g.r. nil, y.r. 68*l.* 12s. 4d.	540
8, Albion-sq., u.t. 33½ yrs., g.r. 7*l.*, y.r. 45*l.*	300
By STIMSON & SONS.	
Gray's Inn-road.—47, Acton-st., u.t. 35½ yrs., g.r. 21*l.*, y.r. 40*l.*	100
Holloway.—2 and 4, Brook-st., u.t. 57½ yrs., g.r. 11*l.*, y.r. 52*l.*	390
Camberwell.—29 and 31, Neate-st. (s.), u.t. 7½ yrs., g.r. 9*l.*, y.r. 86*l.* 12s.	150
Bermondsey.—87, Fort-rd., u.t. 23½ yrs., g.r. 4*l.*, w.r. 41*l.* 12s.	210
Clapham.—104, Fentiman-rd., f., e.r. 75*l.*	1,200
5, Richmond-ter., u.t. 22½ yrs., g.r. 7*l.* 10s., e.r. 45*l.*	200
Herne Hill.—141, Fawnbrake-av., u.t. 93 yrs., g.r. 8*l.*, e.r. 45*l.*	450
By FRANK SWAIN.	
Notting Hill.—Holland Park-av., "The Castle" p-h., etc., f.g.r. 100*l.*, reversion in 47 yrs.	3,000
By CRONKS (at Maidstone).	
East Malling, Kent.—"Paris Farm," 43 a. 1 r. 5 p., f., p.	1,480
December 1.—By BEARD & SON.	
Shepherd's Bush.—86, 90, and 92, Godolphin-rd., f., y.r. 110*l.*	1,655
56, Warbeck-rd., f., y.r. 42*l.*	495
By GEO. BILLINGS.	
Hackney.—41, Lauriston-rd., u.t. 37 yrs., g.r. 6*l.*, y.r. 38*l.*	£305
7 and 9, Gaskin-rd., u.t. 50 yrs., g.r. 7*l.*, y.r. 56*l.*	585
By J. GRIFFIN & SON.	
Ealing.—Durham-rd., f.g. rents 52*l.* 5s., reversion in 96 yrs.	1,190
Pope's-la., f.g.r. 27*l.*, reversion in 96 yrs.	620
Devonshire-rd., f.g.r. 44*l.* 8s., reversion in 98 yrs.	975

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; g.r. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

FRIDAY, DECEMBER 8.

Junior Institution of Engineers.—Professor J. T. Morris on "Electric Mains for Power Transmission Work." 8 p.m.

MONDAY, DECEMBER 11.

Society of Arts (Cantor Lecture).—Dr. J. A. Fleming on "The Measurement of High Frequency Currents and Electric Waves." III. 8 p.m.

Surveyors' Institution.—Mr. J. J. Done on "Valuations for Mortgage." 4 p.m.

TUESDAY, DECEMBER 12.

Society of Arts (Applied Art Section).—Mr. Louis N. Parker on "Historical Pageants." 8 p.m.

Institution of Civil Engineers.—Paper to be further discussed: "The Steam Turbine," by the Hon. Charles Algernon Parsons and Mr. G. G. Stoney. 8 p.m.

WEDNESDAY, DECEMBER 13.

Edinburgh Architectural Association.—Mr. L. G. Mouchel on "Ferro-Concrete Construction," illustrated by lantern slides. 8 p.m.

Society of Arts.—Mr. W. F. Mitchell on "The Commerce and Industries of Japan." 8 p.m.

Institute of Sanitary Engineers.—Annual Dinner, Holborn Restaurant. 6 p.m.

Northern Architectural Association.—Mr. T. Preston on "Italian Art and Travel," with lantern illustrations. 7.30 p.m.

THURSDAY, DECEMBER 14.

Institution of Electrical Engineers.—Adjourned discussion on Mr. W. H. Patchell's paper on "The Charing Cross Company's City of London Works." 8 p.m.

T Square Club (International Hall, Monico Restaurant).—General meeting. The chair will be taken by Mr. C. W. Stephenson. 5.45 p.m.

Manchester Society of Architects.—Mr. C. H. Heathcote on "Some Lessons from American Methods." 6.45 p.m.

FRIDAY, DECEMBER 15.

Architectural Association.—Mr. W. H. Bidlake on "Church Towers and Spires," illustrated with lantern views. 7.30 p.m.

Institution of Mechanical Engineers.—(1) Adjourned discussion on the Seventh Report to the Alloys Research Committee on the "Properties of a Series of Iron-Nickel-Manganese-Carbon Alloys," by Dr. H. C. H. Carpenter, Mr. R. A. Hadfield (member), and Mr. Percy Longmuir; (2) paper to be read and discussed (if time permits), "Behaviour of Materials of Construction Under Pure Shear," by Mr. E. G. Izod. 8 p.m.

Junior Institution of Engineers (the Westminster Palace Hotel).—Paper on "Electrical Mains for Power Transmission Work," by Professor J. T. Morris, M.I.E.E. 8 p.m.

Institution of Civil Engineers (*Students' Meeting*).—Mr. E. E. Mann, B.Sc., on "Tests of Street Illumination in Westminster." 8 p.m.

SATURDAY, DECEMBER 16.

Junior Institution of Engineers.—Visit to the Electrical Engineering Works of Messrs. Johnson & Phillips, Old Charlton. 10 a.m.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks	1	7	0	per 1000 alongside, in river.		
Rough Stocks and Grizzles	1	4	0	,,	,,	,,
Facing Stocks	2	0	0	,,	,,	,,
Shippers	2	0	0	,,	,,	,,
Flettons	1	5	6	,,	at railway depot.	
Red Wire Cuts	1	11	0	,,	,,	,,
Best Fareham Red	3	12	0	,,	,,	,,
Best Red Pressed Ruabon Facing	5	0	0	,,	,,	,,
Best Blue Pressed Staffordshire	4	1	0	,,	,,	,,
Do. Bullnose	4	6	6	,,	,,	,,
Best Stourbridge Fire Bricks	3	15	6	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	12	0	0	,,	,,	,,
Headers	11	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	16	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamferred, Squints	20	0	0	,,	,,	,,

BRICKS, &c. (*continued*).

GLAZED BRICKS—*Continued.*

	£	s.	d.	
Best Dipped Salt Glazed Stretchers, and Header.	12	0	0	per 1,000 at railway depôt.
Quoins, Bullnose, and Flats	14	0	0	" " "
Double Stretchers	15	0	0	" " "
Double Headers	14	0	0	" " "
One Side and two Ends	15	0	0	" " "
Two Sides and one End	15	0	0	" " "
Splays, Chamferred, Squints	14	0	0	" " "
Second Quality White and Dipped Salt Glazed	2	0	0	" less than best.

	s.	d.	
Thames and Pit Sand	6	9	per yard, delivered.
Thames Ballast	5	3	" "
Best Portland Cement	26	0	per ton, "
Best Ground Blue Lias Lime	19	0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	" "
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1	" "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½	" "

	s.	d.	
Ancaster in blocks	1	10	per ft. cube, deld. rly. depôt.
Beer "	1	6	" "
Greenshill "	1	10	" "
Darley Dale in blocks	2	4	" "
Red Corsehill "	2	2	" "
Closeburn Red Freestone	2	0	" "
Red Mansfield "	2	4	" "

YORK STONE—*Robin Hood Quality.*

Scappled random blocks	2	10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super., "
6 in. rubbed two sides ditto, ditto	2	6	" "
3 in. sawn two sides slabs (random sizes)	0	11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	" "
in. to 2 in. ditto, ditto	0	6	" "

HARD YORK—

Scappled random blocks	3	0	per ft. cube, "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8	per ft. super., "
6 in. rubbed two sides ditto	3	0	" "
3 in. sawn two sides slabs (random sizes)	1	2	" "
2 in. self-faced random flags	0	5	" "

	s.	d.	
Hopton Wood (Hard Bed) in blocks	2	0	per ft. cube, deld. rly. depôt.
" " " 6 in. sawn both sides landings	2	7	per ft. super. deld. rly. depôt.
" " " 3 in. sawn both sides random slabs	1	0	" "
" " " 2 in. do.	0	8½	" "

SLATES.

In. In.	£	s.	d.	
20×10 best blue Bangor	13	2	6	per 1000 of 1200 at r. d.
20×12 " "	13	17	6	" "
20×10 first quality "	13	0	0	" "
20×12 " "	13	15	0	" "
16×8 " "	7	5	0	" "
20×10 best blue Portmadoc	12	12	6	" "
16×8 " "	6	12	6	" "
20×10 best Eureka unfading green	15	17	6	" "
20×12 " " ...	18	7	6	" "
18×10 " " ...	13	5	0	" "
18×8 " " ...	10	5	0	" "
20×10 permanent green	11	12	6	" "
18×10 " "	9	12	6	" "
16×8 " "	6	12	6	" "

TILES.

	s.	d.	
Best plain red roofing tiles	42	0	per 1000 at rly. depôt.
Hip and Valley tiles	3	7	per doz. "
Best Broseley tiles	50	0	per 1000 "
Do. Ornamental tiles	52	6	" "
Hip and Valley tiles	4	0	per doz. "
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000 "
Do. Ornamental do.	60	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	0	" "
Best Red or Mottled Staffordshire do. (Peakes)	51	9	per 1000 "
Do. Ornamental do.	54	6	" "
Hip tiles	4	1	per doz. "
Valley tiles	3	8	" "
Best "Rosemary" brand plain tiles	48	0	per 1000 "
Best Ornamental tiles	50	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	8	" "
Best "Hartshill" brand plain tiles, sand-faced	50	0	per 1000 "
Do. pressed	47	6	" "
Do. Ornamental do.	50	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	6	" "

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.		£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13	10	0	...	15	0	0
Deals: best 3 by 9	13	0	0	...	14	0	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	0	0	...	12	0	0
Battens: best 2½ by 6 and 3 by 6	0	10	0	less than 7 in. and 8 in.			
Deals: seconds	1	0	0	less than best.			
Battens: seconds	0	10	0	" "			
2 in. by 4 in. and 2 in. by 6 in.	9	0	0	...	10	0	0
2 in. by 4½ in. and 2 in. by 5 in.	8	10	0	...	9	10	0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.			
¾ in.	1	0	0	"			
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 4	10	0	...	5	0	0
Seconds	4	0	0	...	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	...	3	15	0
Small timber (6 in. to 8 in.)	3	0	0	...	3	10	0
Swedish balks	2	10	0	...	3	0	0
Pitch-pine timber (30 ft. average)	3	5	0	...	3	15	0
JOINERS' WOOD.	At per standard.						
White Sea: first yellow deals, 3 in. by 11 in.	24	0	0	...	25	0	0
3 in. by 9 in.	22	0	0	...	23	0	0
Battens, 2½ in. and 3 in. by 7 in.	16	10	0	...	18	0	0
Second yellow deals, 3 in. by 11 in.	18	10	0	...	20	0	0
" " 3 in. by 9 in.	17	10	0	...	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	...	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	13	10	0	...	15	0	0
Battens, 2½ in. and 3 in. by 7 in.	11	0	0	...	12	0	0
Petersburg: first yellow deals, 3 in. by 11 in.	21	0	0	...	22	10	0
Do. 3 in. by 9 in.	18	0	0	...	19	10	0
Battens	13	10	0	...	15	0	0
Second yellow deals, 3in. by 11in.	16	0	0	...	17	0	0
Do. 3 in. by 9 in.	14	10	0	...	16	0	0
Battens	11	0	0	...	12	10	0
Third yellow deals, 3 in. by 11 in.	13	0	0	...	14	0	0
Do. 3 in. by 9 in.	12	10	0	...	14	0	0
Battens	10	0	0	...	11	0	0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	14	10	0	...	15	10	0
" " 3 in. by 9 in.	13	10	0	...	14	10	0
Battens	11	0	0	...	12	0	0
Second white deals, 3 in. by 11 in.	13	10	0	...	14	10	0
" " 3 in. by 9 in.	12	10	0	...	13	10	0
" " battens	10	0	0	...	11	0	0
Pitch-pine: deals	16	10	0	...	20	0	0
Under 2 in. thick extra	0	10	0	...	1	0	0
Yellow Pine—First, regular sizes	44	0	0	upwards.			
Oddments	32	0	0	"			
Seconds, regular sizes	33	0	0	"			
Yellow Pine oddments	28	0	0	"			
Kauri Pine—Planks, per ft. cube	0	3	6	...	0	5	0
Danzig and Stettin Oak Logs— Large, per ft. cube	0	3	0	...	0	3	6
Small " "	0	2	6	...	0	2	9
Wainscot Oak Logs, per ft. cube	0	5	0	...	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	8	...	0	0	9
¾ in. do. do	0	0	7	...		—	
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0	0	9	...	0	1	0
Selected, Figury, per ft. super. as inch	0	1	6	...	0	2	6
Dry Walnut, American, per ft. super. as inch	0	0	10	...	0	1	0
Teak, per load	17	0	0	...	22	0	0
American Whitewood Planks, per ft. cube	0	4	0	...	0	5	0
Prepared Flooring, etc.—	Per square.						
1 in. by 7 in. yellow, planed and shot	0	13	6	...	0	17	6
1 in. by 7 in. yellow, planed and matched	0	14	0	...	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	...	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	...	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	...	0	15	0
1¼ in. by 7 in. white, planed and matched	0	15	0	...	0	16	6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0	11	0	...	0	13	6
1 in. by 7 in. " "	0	14	0	...	0	18	0
¾ in. by 7 in. white " "	0	10	0	...	0	11	6
1 in. by 7 in. " " "	0	12	9	...	0	15	0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £	s.	d.		£	s.	d.
Rolled Steel Joists, ordinary sections	6	5	0	...	7	0	0
Compound Girders, ordinary sections	7	15	0	...	8	15	0
Steel Compound Stanchions	9	7	6	...	10	17	6
Angles, Tees, and Channels, ordinary sections	7	15	0	...	8	15	0
Flitch Plates	8	0	0	...	8	10	0
Cast Iron Columns and Stanchions including ordinary patterns	6	17	6	...	8	0	0

METALS.

	Per ton, in London. £	s.	d.		£	s.	d.
IRON— Common Bars	8	0	0	...	8	10	0
Staffordshire Crown Bars, good merchant quality	8	10	0	...	9	0	0
Staffordshire "Marked Bars"	10	0	0	...	—		
Mild Steel Bars	8	15	0	...	9	0	0
Hoop Iron, basis price	9	5	0	...	9	10	0
" " Galvanised	17	0	0	...	—		

(*And upwards, according to size and gauge.)

Sheet Iron Black— Ordinary sizes to 20 g.	9	10	0	...	—		
" " 24 g.	10	10	0	...	—		
" " 26 g.	12	0	0	...	—		
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	14	0	0	...	—		
Ordinary sizes to 22 g. and 24 g.	14	10	0	...	—		
" " 26 g.	15	0	0	...	—		

METALS (*continued*).

IRON—*continued.*	Per ton, in London. £	s.	d.		£	s.	d.
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	17	0	0	...	—		
" " 22 g. and 24 g.	17	10	0	...	—		
" " 26 g.	19	0	0	...	—		
Galvanised Corrugated Sheets— Ordinary sizes 6 ft. to 8 ft. 20 g.	13	10	0	...	—		
" " 22 g. and 24 g.	14	0	0	...	—		
" " 26 g.	15	5	0	...	—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11	10	0	...	—		
Best Soft Steel Sheets, 22 g. & 24 g.	12	10	0	...	—		
" " 26 g.	14	15	0	...	—		
Cut Nails, 3 in. to 6 in.	9	10	0	...	9	15	0

(Under 3 in., usual trade extras.)

LEAD, &c.

	Per ton, in London. £	s.	d.		£	s.	d.
LEAD—Sheet, English, 3lb. and up.	18	17	6	...	—		
Pipe in coils	19	7	6	...	—		
Soil pipe	21	17	6	...	—		
Compo pipe	21	17	6	...	—		
ZINC—Sheet Vieille Montagne ton	33	0	0	...	—		
Silesian	32	15	0	...	—		
COPPER— Strong Sheet per lb.	0	1	0	...	—		
Thin " "	0	1	1	...	—		
Copper nails "	0	0	11	...	—		
BRASS— Strong Sheet "	0	0	11	...	—		
Thin " "	0	1	0	...	—		
TIN—English Ingots "	0	1	5½	...	—		
SOLDER—Plumbers' "	0	0	7	...	—		
Tinmen's "	0	0	9	...	—		
Blowpipe "	0	0	10	...	—		

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d.	per ft. delivered.	
" fourths	2d.	" "	
21 oz. thirds	3½d.	" "	
" fourths	3d.	" "	
26 oz. thirds	4½d.	" "	
" fourths	3½d.	" "	
32 oz. thirds	5½d.	" "	
" fourths	5d.	" "	
Fluted Sheet, 15 oz.	3½d.	" "	
" 21 oz.	4½d.	" "	
⅛ Hartley's Rolled Plate	2d.	" "	
¼ " " "	2½d.	" "	
½ " " "	2½d.	" "	

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	1	7
" " " in barrels	"	0	1	8
" " " in drums	"	0	1	10
Boiled " " in pipes	"	0	1	8
" " " in barrels	"	0	1	10
" " " in drums	"	0	2	0
Turpentine in barrels	"	0	3	9
" in drums	"	0	3	11
Genuine Ground English White Lead	per ton	22	0	0
Red Lead, Dry	"	20	10	0
Best Linseed Oil Putty	per cwt.	0	6	6
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.

	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	0
Fine Elastic Carriage	0	12	6
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	6
Berlin Black	0	16	0
Knotting	0	10	0
French and Brush Polish	0	10	0

TO CORRESPONDENTS.

W. J. (if you will send your address we will reply by letter; the answer is too long to be conveniently given here).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

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All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENT.

(For some Contracts, etc., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be delivered
*DESIGN FOR EXTENSION OF COUNCIL HOUSE Selly Oak, Council Schools, Raddle Barn-lane	Birmingham Corporation King's Norton, U.D.C., Edu. Com.	One hundred guineas Not stated	Mar. 31 No date.

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be delivered
Hampton Hill Fire Station	Hampton U.D.C.	S. H. Chambers, Surveyor Public Offices, Hampton, Middlesex	Dec. 12
Bangor, Co. Down, School	Governors of Endowed School	E. L. Woods, C.E., Bangor, Co. Down	do.
Buxton, School for 400 Boys, Kents Bank-road	Derbyshire Education Committee	C. Swain, Architect, College-road, Buxton	do.
Belfast, Painting, etc., at Dispensary Stations	Belfast Guardians	J. W. Robb, Clerk, Union Workhouse, Belfast	do.
Bingley, Sewer Culvert at Dowley Gap, etc.	Bingley District Council	R. Armistead, Engineer, 8, Charles-street, Bradford	do.
Bingley, Earthenware Pipe Sewers, Dowley Gap, etc.	do.	do.	do.
*SLOP VANS AND WATER VANS	Willesden District Council	Council's Engineer, Public Offices, Dyne-road, Kilburn, N.W.	do.
West Hartlepool, Reconstruc. of Middleton-rd. Bridge	North Eastern Railway Co.	F. Appleyard, Resi. Dk. Eng'rs. Office, Middleton-rd., W. Hartlepl.	Dec. 13
Ballibay, Ireland, Waterworks	Castleblayney R.D.C.	B. Coyle, Clerk Council Office, Castleblayney, Ireland	do.
Grays Thurrock, Stoneware Pipes	Grays Thurrock U.D.C.	A. C. James, Surveyor, High-street, Grays	do.
Grays Thurrock, 135 tons of Scoriæ Bricks	do.	do.	do.
Skewdeck Spans, etc.	East Indian Railway Company	C. W. Young, Secretary, Nicholas-lane, London, E.C.	do.
Rochdale, 500 tons of Oil	Gas and Electricity Committee	T. B. Ball, Manager, Gasworks, Dane-street, Rochdale	do.
Birkenhead, Flagging, Paving, etc., of Passages	Birkenhead Corporation	C. Brownridge, Borough Engineer, Town Hall, Birkenhead	do.
Wolverhampton, Two Class-rooms, Bingley-st. School	Education Committee	T. H. Fleeming, Architect, 10, Queen-square, Wolverhampton	do.
Wolverhampton, Two Classrooms, at Springfield road	do.	do.	do.
Wolverhampton, Desks and Chairs for School of Art	do.	do.	do.
Dovercourt, Road Works, Nelson-road, etc.	Harwich Corporation	H. Ditcham, Borough Surveyor, 7, West-street, Harwich	do.
Penderyn, 4,200 yds. of Pipe Sewers, etc., at Hirwain	Vaynor and Penderyn R.D.C.	R. C. Jenkins, Engineer, Cefor Caed, near Merthyr Tydfil	do.
*ADDITIONS, ETC., AT UNION OFFICES	Burton-on-Trent Guardians	T. Jenkins, Architect, Station-street, Burton-on-Trent	do.
Bridlington, Two Timber Groynes, North Foreshore	Bridlington Property Committee	E. R. Matthews, C.E., Town Hall, Bridlington	Dec. 14
Aberdare, 61 Houses	Gadlys Uchaf Building Club	T. D. Williams, 10, Canon-street, Aberdare	do.
Walthamstow, Concrete Pipes	Walthamstow U.D.C.	Surveyor to Council, Town Hall, Walthamstow	do.
Stores	Barry Railway Company	Storekeeper, Broad-street, Barry	Dec. 15
Baltic Timbers and Pitch Pine	Crown Agents for the Colonies	Crown Agent for Colonies, Whitehall Gardens, London, S.W.	do.
Edinburgh, Conveniences, etc., E. Princes-st.-gardens	Edinburgh Corporation	Burgh Surveyor, City-chambers, Edinburgh	do.
Cwmsyflog, Alterations, etc., to School	Monmouthshire Education Com.	C. Dauncey, County Council Offices, Newport, Mon.	Dec. 16
Georgetown (Tredegar), Alterations, etc., to School	do.	do.	do.
Materials	Longton Corporation	J. W. Wardle, Boro' Surveyor, Court House, Longton, Staffs	do.
Derby, Alterations, etc., Poor Law Offices, Becket-st.	Derby Guardians	F. C. Coulthurst, Architect, 4, Albert-street, Derby	do.
Newton-in-Makerfield, Rebuild. etc., Pumping Engine	The U.D.C.	R. T. Surtees, Waterworks Engineer, at the Waterworks	do.
Willerby, Altns., etc., to Blocks at Hull City Asylum	Hull Asylums Committee	J. H. Hirst, City Architect, Town Hall, Hull	do.
Leeds, Furnishing Infirmary (block "A")	Leeds Guardians	T. Winn & Sons, Architects, 84, Albion-street, Leeds	Dec. 18
Abergwynfi, Hot Water Heating Plant at Council Sch.	Glamorgan County Council	T. M. Franklen, County Council Offices, Westgate-street, Cardiff	do.
Reading, Main Road Materials	Berkshire County Council	J. F. Hawkins, County Surveyor, Bank-ch. Cross-street, Reading	do.
Settle, Outfall Sewers and Disposal Works	Settle R.D.C.	Barber, Hopkinson, & Co., Engineers, Crown Bank-chbrs., Keighley	do.
Coventry, Oxide Shed at Toreshill Works	Coventry Gas Committee	F. W. Stevenson, Engineer, Gas Works, Coventry	do.
Dalkey, Sewer at Killiney and Barnhill Roads	Dalkey U.D.C.	J. P. Gahan, Clerk, Town Hall, Dalkey, Ireland	do.
Perth, Widening Street, Causewaying, etc.	Perth Town Council	R. M'Killop, Burgh Surveyor, Perth	do.
West Hartlepool, Additions to Golden Lion Hotel	.....	At Hotel, Stockton-street, West Hartlepool	do.
Chorley, Disinfecting Liquid	Chorley Corporation	J. Mills, Town Clerk, Town Hall, Chorley	do.
*ROAD WIDENING, PIPE SEWERS, ETC.	Hendon U.D.C.	Council's Engineer, Council Offices, Hendon, N.W.	do.
*MAK.-UP YORK, NATAL, OAKS RD., BOWES-PK.	Southgate U.D.C.	Council's Surveyor, Council Offices, Palmer's Green, N.	do.
Southwick, Council School	Durham County Education Authority	Brown & Spain, Architects, 12, John-street, Sunderland	Dec. 19
Brighton, Boundary Wall in Chalk-lane	Brighton Guardians	B. Burfield, Clerk, Parochial Offices, Prince's-street, Brighton	do.
Hampton Hill, Road Works, Park-road	Hampton U.D.C.	S. H. Chambers, Surveyor Public Offices, Hampton, Middlesex	do.
*ENLARGE., RUGBY STATN. SORTING OFFICE	Commissioners of H.M. Works, etc.	Station Sorting Office, Rugby	do.
*CORRU. IRON ROOF., PADDINGTON GDS., ST.	Great Western Railway	Engineer's Office, Paddington-station, W.	do.
*RECON. BDG. OVER CHELSEA CREEK, LOTS-RD.	L. & N.W. & Gt. W. Jt. Rlys. Com.	do.	do.
*ABERDEEN GRANITE PITCHERS, 4,000 TONS	Borough of Bermondsey	Town Clerk, Town Hall, Spa-road, S.E.	do.
Liverpool, Boundary Walls, etc., Toxteth	Toxteth Park Guardians	W. W. Thomas & Co., Architect, 15, Lord-street, Liverpool	Dec. 20
Swansea, Stores	Graigola Merthyr Co., Ltd.	The Company, Swansea	do.
Great Crosby, Sewers	Great Crosby U.D.C.	W. Hall, Surv., Council Offices, Coronation-rd., Gt. Crosby, Lancs.	do.
Havodyrynys, Crumlin, Alterations, etc., to School	Eastern Group of Masger	H. T. Griggs, Architect, Newport, Mon.	do.
Abersychan, Alterations, etc., to School	do.	do.	do.
Camrose, North, Additions, etc. to Schools	Pembrokeshire Education Authority	D. E. Thomas, Architect, 17, Victoria-place, Haverfordwest	do.
Lambston, Additions, etc., to Schools	do.	do.	do.
Waterston, Additions, etc., to Schools	do.	do.	do.
Moygrove, Cardigan, Additions, etc., to Schools	do.	do.	do.
*MAKING-UP ROADWAY, HARBORD-STREET	Fulham Borough Council	Borough Surveyor, Town Hall, Fulham, S.W.	Dec. 21
Gateshead, Fire Brigade Station	Gateshead Corporation	N. P. Pattinson, Borough Engineer, Town Hall, Gateshead	do.
Tiverton, Sewage Disposal Works	Tiverton Corporation	J. Siddall, Borough Engineer, Town Hall, Tiverton	Dec. 23
Elderslie, N.B., Railway & Widening	Glasgow & South Western Railway	Engineer's Office, St. Enoch's Station, Glasgow	do.
Harpenden, Roadworks, Burton-road	Harpenden U.D.C.	J. H. Leverton, Surveyor, Public Hall, Harpenden	Dec. 27
Lancashire Boiler	Elham Guardians	R. Lonergan, 11, Cheriton-place, Folkestone	do.
Superheaters	do.	do.	do.
*ENLARGE. OF HEAD POST OFFICE, BRADFD.	H.M. Office of Works	H.M. Office of Works, Storey's Gate, Westminster, S.W.	Dec. 28
Prestwich, Infirmary and Home, Charlestown-road	Prestwich Guardians	T. Worthington & Son, Architects, 46, Brown-street, Manchester	Dec. 30
Caeran, Infectious Diseases Hospital	Llandaff and Dinas Powis R.D.C.	J. H. James, Architect, 18, Quay-street, Cardiff	do.
Horsham, Picked Surface Flints and Stone	West Sussex C.C.	W. McIntosh, County Surveyor, 22, Worthing-road, Horsham	do.
Shoreham Harbour, Broken Quartzite, Granite, etc.	do.	do.	Jan. 2
*MAIN DRAINAGE WORKS	Hove Council	Borough Surveyor, Town Hall, Hove	do.
*STORM WATER OUTFALL, GROYNE, ETC.	do.	do.	Jan. 3
Newport, Mon., Extension of Retort-House	Newport Gas Co.	T. Canning, Engineer, Gasworks, Mill-street, Newport, Mon.	do.
Newport, Mon., Regenerative Retort Settings	do.	do.	do.
Newport, Mon., Coke Handling Plant	do.	do.	do.
Newport, Mon., Gas Engines and Plant	do.	do.	do.
Newport, Mon., Six Purifiers	do.	do.	do.
Hamilton, N.B., Bridge over Kype Water	Dis. Comm. Middle Ward, Co., Lanark	W. L. Douglass, C.E., District Offices, Hamilton	Jan. 5
West Hartlepool, Reconstruction of Graving Dock	North Eastern Railway Co.	T. M. Newell, Engineer, Dock Office, Hull	Jan. 10
*EXTENSION OF PIER	Southsea Clarence Pier Co.	A. H. Bone, Engineer, 148, High-street, Portsmouth	do.
*NEW TOWN HALL, LANCASTER	Lancaster Corporation	E. W. Mountford, Architect, 17, Buckingham-street, W.C.	Jan. 11
*ADDS., ETC., SHIREHALL, BURY ST. EDMUNDS	West Suffolk C.C.	A. A. Hunt, County Architect, Sudbury	Jan. 16
Masham, Painting, etc., Wesleyan Chapel	.....	R. Beckwith, Masham	No date.
Llanelly, Colliery Stores	Gt. Mountain Collieries Co., Ltd.	Offices of Company	do.
Pontycymmer, Widening 140 yds. of Upcast Shaft	.....	Ffaldan Collieries, Pontycymmer	do.
Stow, set of Deepwell Pumps	Stow Guardians	R. E. Wilkes, Clerk, Stowmarket	do.
Widnes, St. Paul's Ch. Tower Completion	Building Committee	R. Dixon, 318, Edgeley-road, Cheadle Heath, Stockport	do.
Carlisle, c.i. Watermains, Swine-hill, Scotby to Asylum	Cumberland, etc., Asylum, Garlands	G. D. Oliver, County Architect, Carlisle	do.
*NEW SCHOOL FOR GIRLS, WATFORD	Governors, Watford Grammar Schls.	C. P. Ayres, Architect, Rickmansworth-road, Watford	do.
*NEW SCHOOL AT BURNTWOOD	Staffs Education Committee	Offices of the Education Committee, Stafford	do.

PUBLIC APPOINTMENT.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*SECOND-CLASS ENGINEERS, G.P.O.	Civil Service Commission	Not stated	Jan. 11

Those marked with an asterisk (*) are advertised in this number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*, xvii.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ALTOFTS.—For the erection of caretaker's house at Sewage Outfall Works, for the Urban District Council. Mr. J. C. Coates, architect, Altofts. Quantities by architect:—

Hards Bros.	£298	13	9
J. R. Oxer	257	10	0
J. Brasham	256	10	0
W. P. Hutchinson	250	0	0
Thorpe & Beddard‡	244	0	7
R. Leake & Sons, Normanton*	£235	0	0
Drinkwater & Gallagher	234	0	0

‡ Painting excluded.

BARKING TOWN.—For private street works in Park, Faircross, and Monteagle Avenues, for the Urban District Council. Mr. C. F. Dawson, Surveyor, Public Offices, Barking. Quantities by Surveyor:—

—	With Norway Granite Block Channelling.	With Scoriæ Sett Channelling.	With Concrete Block Channelling.
	£ s. d.	£ s. d.	£ s. d.
Parsons & Parsons, Ilford*	2,308 8 2	2,308 8 2	2,308 8 2
‡	‡2,301 17 1		
G. J. Anderson	2,330 2 9	2,301 17 1	2,273 11 5
Hanson & Waterhouse	2,333 5 4	2,234 6 1	2,262 11 7
J. Jackson	2,354 7 7	2,326 2 1	2,495 15 1
B. W. Glenny	2,423 10 1	2,367 8 1	2,423 19 1
Hewett & Sons	2,442 6 1	2,442 6 1	2,385 15 1
D. T. Jackson	2,513 0 0	2,494 3 9	2,484 15 3
J. Shelbourne & Co.	2,534 19 10	2,516 2 10	2,534 19 10
W. Griffiths & Co.	2,574 12 0	2,584 0 0	2,527 9 6
T. Cook-Starkey	2,577 5 10	2,549 0 4	2,440 10 11
T. Free & Sons	2,601 13 1	2,290 0 7	2,582 16 1
F. Miskin, Ltd.	2,748 0 1	2,705 11 10	2,705 11 10

‡ With granite sett channelling.

BLACKBURN.—For the erection of a new Post-office, for the Commissioners of H.M. Works and Public Buildings:—

		Credit.
J. Parkinson & Sons, Ltd.	£12,531 14 8	.... —
R. Neill & Sons,	12,500 0 0	.... £125
W. Thornton & Son	11,981 0 0	.... —
J. Knowles	11,775 0 0	 65
E. Whewell	11,480 0 0	 45
J. Boland	11,100 0 0	 50
Marshall & Dent	11,000 0 0	 42
J. Fecitt & Sons	10,980 0 0	 45
W. Livesey	10,900 0 0	 50
E. Lewis & Sons	10,745 0 0	 50
T. Higson & Sons	10,446 0 0	 50
J. Cronshaw	10,250 0 0	 50
W. J. Woof Cronshaw & Sons*	10,200 0 0	 70

BOURNEMOUTH.—For construction of two passenger lifts on east and west cliffs, for the Town Council. Mr. F. W. Lacey, Borough Engineer:—

Waygood & Co., Falmouth-road, Great Dover-street, London, S.E. £3,700

BOURNEMOUTH.—For making up Stanfield-road and Sedgeley-road, for the Town Council. Mr. F. W. Lacey, Borough Engineer, Municipal Offices, Bournemouth:—

Grounds & Newton, Richmond-chambers, The Square, Bournemouth* £609 11 6

BOURNEMOUTH.—For sewering Portland and York-roads, for the Town Council. Mr. F. W. Lacey, Borough Engineer, Municipal Offices, Bournemouth:—

Grounds & Newton, Richmond-chambers, The Square, Bournemouth* £195 9 2

BOURNEMOUTH.—For sewering Muscliff-road, for the Town Council. Mr. F. W. Lacey, Borough Engineer, Municipal Offices, Bournemouth:—

Grounds & Newton, Richmond-chambers, The Square, Bournemouth* £255 12 6

CARDIFF.—For building two cottages at Marshfield, for Mr. E. Patten. Mr. J. Coates Carter, architect, Bank-buildings, Cardiff:—

Cox & Bardo	£538	0	0
E. R. Evans & Bros.	525	0	0
H. T. Rees	510	0	0
E. T. Bevan	500	0	0
J. H. Maggs & Co.	£500	0	0
Leadbeter Bros.	449	0	0
Fursey & Harris, Castleton†	418	0	0
T. James & Son	411	10	0

CONGLETON.—Accepted for workhouse, Congleton. Mr. W. Wyatt, engineer, 99, Radford-road, Leamington:—

For Cast-iron Pipes.

The Staveley Coal and Iron Co., 6-in. pipes, £4 13s. 6d.; 4-in. pipes, £4 16s.; 3-in. pipes, £4 18s. per ton.

For Valves and Hydrants.

Glenfield & Kennedy, Kilmarnock Urban District, £50 2s.; Rural District, £10 19s.; Guardians, £52 12s. 9d.

EAST STONEHOUSE.—For erecting a new mortuary, for the Urban District Council. Mr. B. Townshend, Surveyor, Town Hall, East Stonehouse:—

F. T. Pitwood	£327	A. Smith	£310
T. Crews	324	E. Porter, East Stonehouse*	299
A. J. Allen	316		

FALMOUTH.—For surface water drainage at Berkeley-place. Mr. W. H. Tresidder, Borough Surveyor, Falmouth:—

	s.	d.
Corder & Barnicoat, Falmouth*	3	3‡
N. Christophers	3	11‡
F. Strongman & Sons	4	6‡

‡ Per lineal yard for 9-in. drain; average depth of trench, 2 ft. 6 in.

FLIXTON.—For the construction in stone and concrete of a bridge between Flixton and Carrington over the River Mersey, for the County Palatines of Lancaster and Chester. Mr. W. Compton Hall, County Bridgemaster:—

M. Hawley, Ridgmont, Burstwick, Hull £3,595 13 2

GUILDFORD.—For forming Middelton-road on the Woodoridge Estate, Guildford. Messrs. Houston & Houston, architects and surveyors, 7, Long-acre, W.C., and 148, High-street, Guildford:—

Cunningham, Forbes, & Co.	£1,697	0	0
Musselwhite & Sapp	1,689	0	0
Hewett & Sons	1,644	16	10
J. Smith & Sons, Ltd.	1,630	17	3
S. Atkins	1,607	0	0
James & Heburn	1,554	0	0
S. Kavanagh & Co.	£1,525	0	0
J. May	1,500	0	0
A. Streeter & Co.	1,477	18	9
G. A. Franks	1,473	0	0
Edwards & Co., London*	1,430	0	0

HEATHER LEAZES.—For erecting a boarding-house of seventeen rooms at Heather Leazes, near Warkworth, for the Misses Smith. Mr. Temple Wilson, architect and surveyor, Alnwick:—

Brickwork and Joiner Work.

R. Carse, Amble, Acklington* £605 5 8

Plumbing.

Reavell Bros., Alnwick* 112 14 0

Slating and Plastering.

J. Purdie, Alnwick* 133 0 6

Painting and Glazing.

J. W. Kransgrill, Alnwick* 17 0 0

HENDON.—For supplying and fixing of about 250 yds. of creosoted deal post and rail fencing, for the Urban District Council. Mr. S. S. Grimley, Council's Surveyor, The Burroughs, Hendon, N.W.:—

—	Posts. 7 ft. 6 in. by 3 in. by 7 in.	Stakes. 6 ft. by 2 in. by 4 in.	Rails. 18 ft. by 1½ in. by 4 in.	Erecting. Per yd. run.	Concreting each post.
	s. d.	d.	s. d.	s. d.	s. d.
A. Stevens	2 0	7	1 10	0 6	3 10
Rowland Bros., Fenny Stratford*	2 2½	7½	1 5½	0 4	3 3
D. Parkins	2 6	9½	1 4	1 0	5 6

HENDON.—For making-up and paving Montagu-road, West Hendon, for the Urban District Council. Mr. S. S. Grimley, Council's Engineer, The Burroughs, Hendon, N.W.:—

J. Molem & Co.	£1,183	0	0
J. Shelbourne & Co.	1,156	3	8
T. Adams	1,128	18	5
A. T. Catley	1,090	0	0
R. Ballard, Ltd.	1,048	0	0
F. G. Brummell	£994	19	10
J. & W. Drake, Hammersmith-road, W.*	989	0	0

HOUNSLOW.—For completing six villas. Mr. E. Pennington, architect and surveyor, Richmond:—

	Net totals.				Net totals.		
W. R. & A. Hide	£1,320	0	0	F. Deacon & Son	£845	0	0
Leather & Son	1,150	0	0	E. J. Burton	800	0	0
Green & Smith	1,145	0	0	Currington	800	0	0
G. W. Street	1,039	10	0	C. Kendal	798	0	0
J. C. Snell	1,025	0	0	Stinchcome & Co.	700	0	0
Heywood & Sparkman	998	0	0	F. Smith	696	0	0
Myall & Upson	980	0	0	Hill & Nickols	695	0	0
Chamber Bros.	955	0	0	Hall & Jacobs	690	0	0
W. Jervis	924	12	6	Woollaston Bros.	660	0	0
H. Rogers	920	0	0	J. E. Saunders	636	0	0
Harris & Co.	895	0	0	F. F. Couch	630	0	0
F. B. Hope	890	0	0	A. J. Gardner	600	0	0
B. Sargeant	887	0	0	H. & N. Cude	580	0	0
G. Wales	868	16	0	N. H. Trott	485	10	0
F. D. Hidden	850	0	0	H. H. Baber & Co.	465	0	0

LEIGH.—For reconstruction of Hurst Mill Bridge in concrete and stone, for the Main Roads and Bridges Committee of the County Palatine of Lancaster. Mr. W. Compton Hall, County Bridgemaster:—

H. M. Nowell, Stockton-on-Tees and Manchester £520 3

LONDON.—For erecting Physically Defective school, Rosendale-road, Wandsworth, for the London County Council:—

F. & H. F. Higgs	£3,570 0 0
W. Akers & Co., Ltd.	3,513 0 0
Leslie & Co., Ltd.	3,390 0 0
J. Marsland & Sons	3,475 0 0
Galbraith Bros.	3,471 15 6
W. Downs	3,457 0 0
E. Triggs	3,540 0 0
J. Smith & Sons, Ltd.	3,398 0 0
L. Whitehead & Co., Ltd.	3,393 0 0
Holliday & Greenwood, Ltd.	3,390 0 0
J. Garrett & Son	3,354 0 0
J. Appleby & Sons	3,333 0 0
W. Johnson & Co., Ltd.	3,279 0 0
G. E. Wallis & Sons, Ltd.	3,263 0 0
T. G. Sharpington	3,257 0 0
J. & C. Bowyer, Westow-street, Upper Norwood*	3,169 0 0

[The architect's estimate, comparable with these tenders, is £3,403.]

LONDON.—For the construction of a new bridge over the Grand Junction Canal at Old Oak-lane, near Willesden Junction, Acton, for the Light Railways and Tramways Committee of the County Council of Middlesex. Mr. H. T. Wakelam, County Engineer, Middlesex Guildhall, S.W.:—

Pedrette & Co.	£6,850	10	6
W. H. Hyde	6,840	0	0
J. Cochrane & Sons	6,305	0	0
R. H. B. Neal, Ltd.	6,208	0	0
T. Turner	6,182	4	0
Tilbury Contracting Co., Ltd.	6,066	11	0
C. Ford	5,955	0	0
Kellett, Ltd.	5,568	1	7
T. Almond & Son, Ltd.	5,450	0	0
A. Fasey & Co.	5,365	5	7
H. Woodham	5,356	13	4
W. Manders	5,275	4	5
Muirhead, Greig, & Matthews	5,071	18	0
S. Kavanagh & Co.	£4,959	0	0
A. Thorne	4,928	2	0
J. T. Firbank	4,920	4	8
C. Wall & Co.	4,900	0	0
Edwards & Co.	4,817	7	11
Wilkinson Bros.	4,806	0	0
J. Strachan	4,721	0	0
Davies, Ball, & Co.	4,669	16	0
Radford & Greaves, Drewery-lane, Derby*	4,326	0	10½

LONDON.—For erecting six blocks of working-men's flats, Kenley-street, Notting Dale, for the Royal Borough of Kensington:—

Colley & Sons	£10,672	W. Taylor & Co.	£9,497
J. E. Johnson & Son	10,150	F. Webster & Co.	9,415
W. Johnson & Co., Ltd.	10,145	Martin, Wells, & Co.	9,400
R. A. Lowe	10,079	D. F. Lamplough	9,371
Holliday & Greenwood, Ltd.	9,977	J. Chessum & Sons	9,370
H. Lovatt, Ltd.	9,920	F. Gough & Co.	9,334
J. H. Bywaters	9,900	A. Hudson & Co.	9,300
Leslie & Co.	9,869	J. Appleby & Sons	9,220
F. & G. Foster	9,720	W. Lawrence & Son	9,149
H. L. Holloway	9,668	J. Barker & Co., Ltd.	8,739
C. F. Kearley	9,634	J. Garrett & Son	8,650
Cowley & Drake	9,576	C. Gray	8,250
B. E. Nightingale	9,572	E. J. Clayton	8,000
		Chambers Bros., Ealing	7,575

LONDON.—For the enlargement by twenty places, of the manual training centre on the Brandlehow-road site, Wandsworth, for the London County Council:—

Leslie & Co., Ltd.	£738	10	10
Macey & Sons, Ltd.	647	0	0
Lole & Co.	645	17	8
E. Triggs	641	0	0
J. Shelbourne & Co., Ltd., Wandsworth	£616	2	2
W. Johnson & Co., Ltd., Wandsworth Common*	584	0	0

[The architect's estimate, comparable with these tenders, is £639.]

LONDON.—For a public underground convenience at the junction of Well-street and Mare-street, Hackney, for the Hackney Borough Council. Mr. Norman Scorgie, Borough Engineer and Surveyor, Town Hall, Hackney, N.E.:—

A. E. Symes	£1,813	0	0
G. Jennings, Ltd.	1,752	0	0
J. E. Saunders	1,747	0	0
W. Shurmur & Sons, Ltd.	1,746	0	0
Rowley Bros.	1,745	0	0
Davis & Bennett	1,740	10	9
J. C. Mather	1,700	0	0
Spencer, Santo, & Co., Ltd.	1,680	0	0
G. Wales & Co., Ltd.	£1,593	9	0
L. Whitehead & Co., Ltd.	1,587	0	0
Stapleton & Sons	1,572	0	0
B. E. Nightingale	1,570	0	0
F. & G. Foster	1,547	0	0
T. Almond & Son, Ltd., Ponders End, N.*	1,532	0	0

LONDON.—For the completion of the Fulham Palace-road School, Fulham, for the London County Council:—

W. Downs	£3,517	0	0
Leslie & Co.	3,498	4	5
Lole & Co.	3,481	1	9
Clarke & Bracey	3,429	0	0
E. Triggs	3,416	0	0
W. Smith & Son	3,373	0	0
C. Wall, Ltd.	3,316	9	1
Waring-White Building Co., Ltd.	£3,300	0	0
L. Whitehead & Co., Ltd.	3,208	0	0
C. F. Kearley, 195B, Kensington High-st*	3,098	0	0

[The architect's estimate, comparable with these tenders, is £3,120.]

LONDON.—For refacing, etc., the external stonework of Caxton Hall, Westminster, for the Westminster City Council:—

W. H. Gascelles & Co.	£220
A. Dreyfus*	146

LONDON.—For carrying out a scheme of improvements in the infants' school (which is a separate one-story building) on the Gideon-road site (Battersea), for the London County Council:—

J. Garrett & Son	£2,973	0	0
Rice & Son	2,920	0	0
Lathey Bros.	2,873	0	0
E. Triggs	2,860	0	0
Galbraith Bros.	2,834	7	6
L. Whitehead & Co., Ltd.	2,817	0	0
L. H. & R. Roberts	£2,814	0	0
W. Johnson & Co., Ltd.	2,807	0	0
J. Appleby & Sons, Cornwall Works, Lambeth*	2,664	0	0

[The architect's estimate, comparable with these tenders, is £3,079.]

LONDON.—For the erection of three penstocks required on the northern low-level sewer No. 2, at the Stamford Brook and Counter's Creek sewers, for the London County Council:—

J. Cochrane	£560	Glenfield & Kennedy, Ltd.	£504
Hunter & English	545	J. Blakeborough & Sons, Brighouse*	453
A. Frost & Co., Ltd.	525		

MILTON-NEXT-SITTINGBOURNE.—For 1,063 yds. of 12-in. and 507 yds. of 9-in. earthenware glazed pipe sewer, London and Staplehurst roads, for the Urban District Council. Mr. W. R. Warlow, Surveyor, Town Hall, Milton:—

Millen & Chrisfield, Milton-next-Sittingbourne* £815 12 6

NOTTINGHAM.—For two houses, Derby-road. Messrs. A. R. Calvert & W. R. Gleave, architects, 18, Low-pavement:—

W. Crame, Ltd.* £1,193 5 0

[Lowest of nine tenders.]

NOTTINGHAM.—For two shops, Derby-road. Messrs. A. R. Calvert & W. R. Gleave, architects, 18, Low-pavement:—

W. Crame, Ltd.* £332 10 0

[Lowest of six tenders.]

OLDBURY.—For heating apparatus at new school, Rood End, for the Urban District Council Education Committee. Mr. A. Long, architect, 21, New-street, West Bromwich:—

Lucas & Son, Cradley Heath* £275

PONTEFRACT.—For erection of Farm Cottage at Fairleigh, Pontefract, for Mr. James Crowther. Messrs. Garside & Pennington, architects, Ropergate House, Pontefract:—

Gallagher Bros.	£475 3 3	Walker & Ward, Pontefract*	£397 1 10
A. Askam	434 3 10		
M. Dixon & Sons	432 10 0		

PRESTON-NEXT-WINGHAM.—For new council school, for the Kent Education Committee. Mr. Wilfrid H. Robinsen, Surveyor:—

F. & G. Foster	£2,654	L. Seager	£2,215
E. J. Bowles	2,625	Sturry Building Co., Ltd.	2,155
H. Kent	2,621	W. J. Adcock	2,095
A. J. Brewster	2,400	W. W. Martin	2,071
H. Lovatt, Ltd.	2,380	G. Browning	2,034
Rowland Bros.	2,339	A. Ovenden	2,015
J. H. Forwalk	2,305	Gann & Co., Ltd., Whitstable†	1,933
G. & H. Denne & Son	2,285		
Hayward & Paramor	2,259		
R. Webster	2,248		

RODNEY STOKE.—For constructing a collecting tank at Rodney Stoke, and providing and laying 200 yds. of 4-in. piping, for Street Urban District Council. Mr. A. P. I. Cotterell, M.Inst.C.E., 28, Baldwin-street, Bristol:—

Wright & Son, Glastonbury £138

SHREWSBURY.—For isolation hospital:—

F. Ritchie & Sons, Ltd.	£2,765 0 0
Rowland, Carr, & Co.	2,559 7 10
W. A. Baker & Co., Ltd.	2,100 0 0
Hill Bros.	2,075 0 0
E. C. & J. Keay, Ltd.	1,853 0 0
J. Harrison & Co.	1,851 0 0
Harrison-Smith Building, Ltd.	1,825 0 0
J. Hitchen & Son, Ltd.	1,800 0 0
Bruce & Still, Ltd.	1,762 0 0
Leather & Sons	1,650 0 0
R. Iles, Ltd.	1,639 0 0
C. Leather	1,605 0 0
J. McManus	1,555 0 0
Alnwick Foundry & Engineering Co.	1,543 0 0
J. Mitson & Co.	1,525 0 0
Young, Tinker, & Young	1,515 0 0
Humpreys Ltd.	1,497 0 0
Portable Building Co.	1,451 0 0
W. Harbrow	1,417 0 0
Dadington Construction Co.	1,410 0 0
Boulton & Paul, Ltd.	1,362 0 0
Morton Bros. & Co.	1,350 0 0
J. Hawkins & Co.	1,349 0 0
F. Smith & Co., Ltd.	1,314 0 0
Ginger, Lee, & Co., 35, Richmond-grove, East Longsight, Manchester*	1,249 4 0

SOUTHWELL.—For alterations and additions to house, Southwell. Messrs. A. R. Calvert & W. R. Gleave, architects, 18, Low-pavement:—

F. W. Thompson & Son* £665 0 0

[Lowest of three tenders.]

SPENNYMOOR (Durham).—For kerbing and flagging of High-street from St. Paul's-street to Villiers-street and from Clarence-street to Church-street, for the Urban District Council. Mr. C. R. Spencer, Engineer and Surveyor, Council Offices, Spennymoor:—

Wm. Fletcher	£558 17 6	George Pickering, West Hartlepool*	£495 12 0
George H. Bell	549 15 0		
John Carrick	520 15 6		

TEIGNMOUTH.—For the construction of a dwarf stone wall, and the erection thereon of an unclimbable wrought-iron railing, together with incidental works, at the cemetery extension in Exeter-road and Buckeridge-road, Teignmouth, for the Urban District Council. Mr. C. F. Gettings, Surveyor and Water Engineer, Town Hall, Teignmouth:—

G. H. Marshall	£815 0 0	S. J. Hayman	£599 1 10
E. Harris	738 11 0	W. Turner	570 0 8
E. Andrews	642 8 10	F. C. Francis, Teignmouth*	564 2 0
J. Lambe	625 13 8		

WARLINGHAM.—For alterations and additions to Whyteleafe Council School, Upper Warlingham. Messrs. A. W. Jarvis & F. A. Richards, Architects to the Surrey Education Committee, 36, Victoria-street, London, S.W.:—

C. E. Kenworthy	£3,719 15 9	H. Kent	£2,835 0 0
C. Cooper	3,317 0 2	W. H. Hyde	2,756 0 0
F. & G. Foster	3,143 0 0	W. Roberts	2,743 0 0
G. Cheeseman	3,127 11 0	Marriott & Salter	2,650 0 0
J. Quittenton	2,999 0 0	E. Streather	2,577 10 0
I. Waters & Sons	2,959 5 4	J. Barker & Co.	2,556 0 0
		S. Page & Son	2,497 0 0

WIMBLEDON.—For constructional steel and wrought-iron work, Electricity Works extension, Durnsford-road, for the Borough Council. Mr. C. H. Cooper, Borough Engineer, Town Hall, Wimbledon:—

Norton Bros., Balfour-road, Ilford*‡ £384 6 0

‡ Total amount of tender for two works.

WREXHAM.—For alterations and additions to the Bowling Green Hotel, Penybryn, for Messrs. Worthington & Co. Mr. F. A. Bevan, architect and surveyor, Queen-street, Wrexham. Quantities by architect:—

T. Jones	£847 0 0	T. G. Haxley	£690 0 0
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